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Atty. Docket:DEXNON/095/PC/US

In re patent application of first named inventor: Alan Wightman

Application No.: 09/869,745 Examiner: J. A. BOYD

Filing Date: 9/28/2001 Group Art Unit: 1771

For: Paper And Related Products Of Improved Wet Expansion Profile

**TRANSMITTAL LETTER**

Mail Stop Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

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☐ If checked, claims are being amended.

	No. of claims remaining after amendment	Highest no. of claims previously paid for	no. extra	claim fee	subtotal
Total				\$	\$0.00
Independent				\$	\$0.00

Total claim fees \$ 0.00

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re patent application of:  
Alan Wightman et al

Application No.: 09/869,745

Examiner: J. A. BOYD

Filing Date: 9/28/2001

Group Art Unit: 1771

For: Paper And Related Products Of Improved Wet Expansion Profile

To: Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

ATTENTION: Board of Patent Appeals and Interferences

Honorable Judges:

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**APPEAL BRIEF**



## APPEAL BRIEF

This brief contains the following sections under the headings and in the order set forth below as required by 37 C.F.R. §41.37.

- I. **REAL PARTY IN INTEREST** (37 C.F.R. §41.37(c)(1)(i))
- II. **RELATED APPEALS AND INTERFERENCES** (37 C.F.R. §41.37(c)(1)(ii))
- III. **STATUS OF CLAIMS** (37 C.F.R. §41.37(c)(1)(iii))
- IV. **STATUS OF AMENDMENTS** (37 C.F.R. §41.37(c)(1)(iv))
- V. **SUMMARY OF CLAIMED SUBJECT MATTER** (37 C.F.R. §41.37(c)(1)(v))
- VI. **GROUND OF REJECTION TO BE REVIEWED ON APPEAL** (37 C.F.R. §41.37(c)(1)(vi))
- VII. **ARGUMENT** (37 C.F.R. §41.37(c)(1)(vii))
  - A. **APPELLANT'S AMENDMENT UNDER RULE 116 FILED ON OCTOBER 4, 2004 SHOULD BE ENTERED AND CONSIDERED IN THIS APPEAL.**
    1. The amendment in dispute.
    2. The legal requirement for entry of amended claims.
    3. The record concerning the disputed claims.
    4. The Board should enter and consider Appellant's Rule 116 Amendment as filed on October 4, 2004.
  - B. **APPELLANT'S CLAIMS 22 AND 24-36 ARE DEFINITE UNDER 35 U.S.C. §112, SECOND PARAGRAPH**
    1. The legal requirement for claim definiteness.
    2. Appellant's claims and specification.
    3. The Board should withdraw the rejection of claims 22 and 24-36 under 35 U.S.C. §112, second paragraph.
  - C. **APPELLANT'S CLAIMS 22 AND 24-44 ARE PATENTABLE UNDER 35 U.S.C. §103(a) OVER INTERNATIONAL PUBLICATION NO. WO 95/10190 TO ROSE ET AL IN VIEW OF UNITED STATES PATENT NO. 5,705,214 TO ITO ET AL.**
    1. The Examiner has the burden of establishing a *prima facie* case of obviousness within the legal requirements created by the courts
    2. The Examiner has failed to establish a *prima facie* case of obviousness against claims 22 and 24-44.
      - a. There is no suggestion or motivation to modify the Rose reference.
      - b. There is no expectation of success in modifying the Rose reference.

- c. The Rose reference teaches away from modification as proposed in the Office communication.
  - 3. The Examiner has failed to establish a *prima facie* case of obviousness against claims 25, 30 and 39 for additional reasons.
    - a. The Board should withdraw this rejection of claims 25, 30 and 39.
  - 4. The Examiner has failed to establish a *prima facie* case of obviousness against claims 26-27 and 40-41 for additional reasons.
    - a. The communication reliance on the cited Boesch case is misplaced.
    - b. The Board should withdraw this rejection of claims 26-27 and 40-41.
  - 5. The Examiner has failed to establish a *prima facie* case of obviousness against claim 29 for additional reasons.
- D. THE EXAMINER HAS FAILED TO ADDRESS APPELLANT'S EVIDENCE OF NONOBVIOUSNESS.
- E. THE EXAMINER HAS RESORTED TO IMPERMISSIBLE HINDSIGHT TO FIND APPELLANTS CLAIMS OBVIOUS OVER THE COMBINED ROSE AND ITO REFERENCES.

APPENDIX A CLAIMS INVOLVED IN THE APPEAL

APPENDIX B INTERNATIONAL PUBLICATION NO. WO 00/40092

APPENDIX C EXAMINER SEARCH NOTES FOR U.S. PATENT APPLICATION NO. 09/869,745 DOWNLOADED FROM PTO PAIR SYSTEM.

APPENDIX D COPIES OF THE ASSIGNMENT OF THIS INVENTION AND NAME CHANGE OF THE REAL PARTY IN INTEREST.

The final page of section VII bears the signature of Appellant's attorney.

The present application is a U.S. National Phase entry of International Patent Application No. PCT/GB99/04418, which was published on July 13, 2000 as International Publication No. WO 00/40092. The page and line numbers used in this brief are taken from the above International Publication No. WO 00/40092. A copy of this International Publication is enclosed as APPENDIX B for the Board's convenience.

## **I. REAL PARTY IN INTEREST**

This application was assigned from the inventors to Ahlstrom Dexter LLC, a Delaware Corporation having a principal place of business at 230 Park Avenue, Suite 2215, New York, NY 10169 and a place of business at Two Elm Street, Windsor Locks, CT 06096. This Assignment is recorded at Reel 012402, frame 0460 for 3 pages. Subsequently, Ahlstrom Dexter LLC changed its name to Ahlstrom Windsor Locks LLC and changed its principal place of business to Two Elm Street, Windsor Locks, CT 06096. Copies of the Assignment and name change are enclosed as APPENDIX D.

## **II. RELATED APPEALS AND INTERFERENCES**

There are no known prior or pending appeals, interferences or judicial proceedings related to this application.

## **III. STATUS OF CLAIMS**

### **a. STATEMENT OF STATUS OF ALL CLAIMS IN THIS PROCEEDING**

Claims 1-21 and 23 are cancelled.

Claims 22 and 24-44 are pending in this application.

No claims are allowed.

Claims 22 and 24-44 are rejected.

No claims are withdrawn or objected to.

**b. CLAIMS ON APPEAL**

The claims on appeal are claims 22 and 24-44.

**IV. STATUS OF AMENDMENT**

On October 4, 2004 Appellant submitted an amendment under Rule 116. The amendment modified the form but not the scope of claims 25, 30 and 39 to more positively recite the existing presence of woodpulp fibers. The Rule 116 amendment was not entered. In the Advisory Action dated October 22, 2004 the Examiner did not indicate whether the proposed amendment would be entered for purposes of Appeal.

**V. SUMMARY OF CLAIMED SUBJECT MATTER**

Briefly stated, claim 22 is directed to a nonwoven web material comprising cellulosic fibres and synthetic fibres (page 3, lines 22-23). The cellulosic fibers comprise at least one of abaca fibers, sisal fibers, flax fibers, jute fibers and woodpulp fibers. (page 4, lines 22-27). The synthetic fibers comprise at least one of polyamide fibers, polyamide copolymer fibers, polyester fibers, polyester copolymer fibers, polyolefin fibers and polyolefin copolymer fibers. (page 4, lines 29-33). The inventive web material comprising cellulosic and synthetic fibers has reduced variation in cross direction wet expansion compared to a conventional web material made using only the same cellulosic fibers. (Abstract; page 3, lines 16-19; pages 8-12, Examples 1-5, Figure 1).

Briefly stated, claim 29 is directed to a method for lowering cross direction wet expansion of a nonwoven web material (page 3, lines 21-23) comprising: mixing cellulosic fibres such as at least one of abaca fibers, sisal fibers, flax fibers, jute fibers and woodpulp

fibers (page 4, lines 22-27) and synthetic fibres such as at least one of polyamide fibers, polyamide copolymer fibers, polyester fibers, polyester copolymer fibers, polyolefin fibers and polyolefin copolymer fibers (page 4, lines 29-33). The fibres are preferably mixed in a fluid dispersion and the fluid dispersion is laid over a forming wire (page 4, line 2 “forming, preferably by wet-laying” and Examples, page 8, lines 10-11) although dry laying methods can, in principle, be used (page 5, lines 18-22). The inventive web material comprising cellulosic and synthetic fibers has reduced variation in cross direction wet expansion compared to a conventional web material made using only the same cellulosic fibers (Abstract; page 3, lines 16-19; pages 8-12, Examples 1-5, Figure 1).

Briefly stated, claim 34 is directed to a bonded casing paper (page 3, lines 29-33) comprising a nonwoven web material comprising cellulosic fibres such as at least one of abaca fibers, sisal fibers, flax fibers, jute fibers and woodpulp fibers (page 4, lines 22-27) and synthetic fibres such as at least one of polyamide fibers, polyamide copolymer fibers, polyester fibers, polyester copolymer fibers, polyolefin fibers and polyolefin copolymer fibers (page 4, lines 29-33). The inventive web material comprising cellulosic and synthetic fibers has reduced variation in cross direction wet expansion compared to a conventional web material made using only the same cellulosic fibers (Abstract; page 3, lines 16-19; pages 8-12, Examples 1-5, Figure 1). After formation the web is bonded with regenerated cellulose (page 6, lines 1-11) or a resin binder or a mixture of resin binders (page 6, lines 13-32).

Briefly stated, claim 37 is directed to a casing paper suitable for packaging of meat products (page 3, lines 29-33) comprising a nonwoven web material (page 3, lines 21-23) comprising a mixture of cellulosic fibres such as at least one of abaca fibers, sisal fibers,

flax fibers, jute fibers and woodpulp fibers (page 4, lines 22-27) and synthetic fibres such as at least one of polyamide fibers, polyamide copolymer fibers, polyester fibers, polyester copolymer fibers, polyolefin fibers and polyolefin copolymer fibers or a mixture of at least two of polyamide fibers, polyamide copolymer fibers, polyester fibers, polyester copolymer fibers, polyolefin fibers and polyolefin copolymer fibers (page 4, lines 29-33). The web material is bonded with regenerated cellulose or a binder resin or a mixture of binder resins (page 6, lines 1-32, Examples). The inventive web material comprising cellulosic and synthetic fibers has reduced variation in cross direction wet expansion compared to a conventional web material made using only the same cellulosic fibers (Abstract; page 3, lines 16-19; pages 8-12, Examples 1-5, Figure 1).

Briefly stated, claim 42 is directed to a process for preparing casing paper (page 4, lines 1-5) comprising: forming a web material containing cellulosic fibres such as at least one of abaca fibers, sisal fibers, flax fibers, jute fibers and woodpulp fibers (page 4, lines 22-27) and synthetic fibres such as at least one of polyamide fibers, polyamide copolymer fibers, polyester fibers, polyester copolymer fibers, polyolefin fibers and polyolefin copolymer fibers or a mixture of at least two of polyamide fibers, polyamide copolymer fibers, polyester fibers, polyester copolymer fibers, polyolefin fibers and polyolefin copolymer fibers (page 4, lines 29-33). The fibres are preferably mixed in a fluid dispersion and the fluid dispersion is laid over a forming wire (page 4, line 2 "forming, preferably by wet-laying" and Examples, page 8, lines 10-11) although dry laying methods can, in principle, be used (page 5, lines 18-22). After formation the web material is impregnated with a resin binder, a mixture of resin binders or viscose (page 6, lines 1-32 and Examples).



## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

- A. Whether Appellant's Rule 116 Amendment to claims 25, 30 and 39 filed on October 2, 2004 should be entered.**
- B. Whether claims 22 and 24-36 are definite under 35 U.S.C. §112, second paragraph.**
- C. Whether claims 22 and 24-44 are patentable under 35 U.S.C. §103(a) over International Publication No. WO 95/10190 to Rose et al in view of United States Patent No. 5,705,214 to Ito et al.**

## **VII. ARGUMENT**

- A. APPELLANT'S AMENDMENT UNDER RULE 116 FILED ON OCTOBER 4, 2004 SHOULD BE ENTERED AND CONSIDERED IN THIS APPEAL.**

- 1. The amendment in dispute:**

On October 4, 2004 Appellants filed a Response After Final Office Communication (Amendment Under Rule 116). The Response amended only claims 25, 30 and 39 and only as follows.

25. (currently amended) The web material of claim 22 in which the cellulosic fibres include at least some woodpulp fibres in an amount of up to 50% by weight of a total weight of cellulosic and synthetic fibres.

30. (currently amended) The method of claim 29 wherein the cellulosic fibres include at least some woodpulp fibres in an amount of up to 50% by weight of a total weight of cellulosic and synthetic fibres.

39. (currently amended) A casing paper according to claim 37 in which the cellulosic web includes at least some woodpulp fibres in an amount of up to 50% by weight of a total weight of cellulosic and synthetic fibres.

In the Advisory Action mailed on October 22, 2004 Examiner Boyd stated that this amendment would not be entered because “they raise new issues that would require further consideration and/or search.” Examiner Boyd went on state at page 2 of the Advisory Action: “In response to Applicant’s proposed amendment of claims 25, 30 and 39, the examiner does not find support for such an amendment in the Specification. Please provide the line and page number in the Specification which provides support for the proposed amendment.”

**2. The legal requirement for entry of amended claims.**

37 C.F.R. §1.116(b)(1) states: “An amendment may be made . . . complying with any requirements of form expressly set forth in a previous Office action; . . .” The Manual of Patent Examining Procedure (hereafter MPEP) in section 706.07(e), pp. 700-75, Rev. 1, Feb. 2003 states that amendments complying with objections or requirements as to form are to be permitted after final action in accordance with 37 CFR 1.116(a). The MPEP in section 706.07(a), pp. 700-73, Rev. 1, Feb. 2003 states:

A second or any subsequent action on the merits in any application or patent involved in reexamination proceedings should not be made final if it includes a rejection, on prior art not of record, of any claim amended to include limitations which should reasonably have been expected to be claimed. See MPEP §904 *et seq.* For example, one would reasonably expect that a rejection under 35 U.S.C. 112 for reason of incompleteness would be replied to by an amendment supplying the omitted element.

**3. The record concerning the disputed claims.**

U.S. Application No. 09/869,745 is the U.S. National Phase entry of International Application No PCT/GB99/04418. The specification for the ‘745 application at page 4, lines 20-27 states, with underlining added:

### **Description of exemplary embodiments**

The cellulosic fibres are generally vegetable fibres, preferably long vegetable fibres, such as long, lightweight nonhydrated fibres of the Musa type. Typically, the average fibre lengths will be from 4 to 15 mm but the presence of shorter or longer fibres is not precluded. Exemplary vegetable fibres are sisal, flax, jute or preferably, abaca. However, the cellulosic web may also comprise woodpulp fibres, typically in an amount of up to 50% by weight of the total fibre content.

As filed claim 4 (now canceled) for the '745 application states: "The use according to claim 1, 2 or 3, in which the cellulosic web includes woodpulp fibres in an amount of up to 50% by weight of the total of cellulosic and synthetic fibres."

As filed claim 14 (now canceled) for the '745 application states: "A casing paper according to claim 11, 12 or 13, in which the cellulosic web includes woodpulp fibres in an amount of up to 50% by weight of the total of cellulosic and synthetic fibres."

A preliminary Amendment was filed with the National Phase entry canceling claims 1-21 without prejudice and adding new claims 22-44. Claims 25, 30 and 39 recite:

25. The web material of claim 22 in which the cellulosic fibres include woodpulp fibres in an amount of up to 50% by weight of a total weight of cellulosic and synthetic fibres.

30. The method of claim 29 wherein the cellulosic fibres include woodpulp fibres in an amount of up to 50% by weight of a total weight of cellulosic and synthetic fibres.

39. A casing paper according to claim 37 in which the cellulosic web includes woodpulp fibres in an amount of up to 50% by weight of a total weight of cellulosic and synthetic fibres."

A review of the Examiner Search Notes in the U.S. Patent and Trademark Office PAIR database for this application indicates that in April of 2003 Examiner Boyd explicitly searched for prior art references using a search string including the terms

“wood adj pulp” and “wood”. Copies of the Examiner’s Search Notes are included in APPENDIX C.

In the Office communication mailed on April 10, 2003 (paper 6), page 7, point 9, Examiner Boyd rejected claims 25-27 and 30 under 35 U.S.C. §103(a) as being unpatentable over a reference to Oxley et al. In making this rejection Examiner Boyd stated, with bolding added: “Oxley discloses the claimed **invention except for that the cellulosic web includes wood pulp fibers** in an amount of up to 50% by weight of the total weight of cellulosic and synthetic fibers **as required by claims 25 and 30 . . .**” Appellant successfully argued over this rejection for reasons unrelated to the presence or absence of wood pulp in the web.

In the Office communication mailed on October 3, 2003, page 3, point 4 Examiner Boyd rejected claims 22, 24-25 and 28-36 as anticipated by, or obvious over, International Publication No. WO 95/10190 to Rose. In making this rejection Examiner Boyd stated:

As to claims 25 and 30, Rose teaches that cellulosic fibers are present in the porous substrate (page 4, paragraph 3). It should be noted that Rose does not specifically teach the use of wood pulp fibers as a cellulosic fiber in the substrate. However, the Applicant only requires that the wood pulp components present in the amount of up to 50%, therefore the presence of 0% wood pulp which is implied in Rose would meet the Applicant’s limitations.

Appellant’s Response to the October 3, 2003 Office communication at page 8 made the following statement in regard to the Examiner’s contentions concerning the meaning of Appellant’s claims and the Rose reference:

Claim 25 recites: “The web material of claim 22 in which the cellulosic fibres include woodpulp fibres in an amount of up to 50% by weight of a total weight of cellulosic and synthetic fibres.” Thus claim 25 requires the presence of (include) woodpulp fibers. The Office communication on page 4 acknowledges that a wood pulp component is present in claim 25. The

Office communication on page 4 admits that the Rose reference only IMPLIES "the presence of 0% wood pulp". The IMPLIED presence of NO (0%) wood pulp does NOT meet the acknowledged requirement of claim 25 that some wood pulp be present in the nonwoven material. Applicant respectfully traverses the rejection of claim 25 and asserts it should be withdrawn. Claim 25 is patentable for at least this additional reason.

Clearly, Appellant's argument indicates that claim 25 would include the presence of some amount of wood pulp fibers in an amount greater than 0% and up to 50% by weight. This Response made similar arguments with respect to claims 30 (page 9) and 39 (page 15).

In the Office Communication mailed on July 23, 2004, page 3, Examiner Boyd again rejected claims 25 and 30 as being obvious over the Rose reference in view of U.S. Patent No. 5,705,214 to Ito et al. The rejection repeats the statement from the previous Office Communication that Applicants' claims include 0% wood pulp, which 0% is implied in the Rose application. In addressing Appellants' arguments, Examiner Boyd stated on page 8, point 8, with underlining added:

In response to Applicants' arguments that claims 25, 30 and 39 imply the presence of wood pulp, the Examiner respectfully argues the contrary. The claims require that the wood pulp fibers are present in "an amount of up to 50% by weight of the total weight of the cellulosic and synthetic fibers". It should be noted that no lower bound has been stated in the claims. Therefore the phrase "of up to 50%" requires only that any numerical value from 0 to 50 would meet the Applicants' requirements. If the Applicant incorporated a lower bound, then the claim would positively recite that some level of wood pulp fibers greater than 0 must be present.

Appellant's Response to the July 23, 2004 Office communication filed on October 4, 2004 at pages 6-7 made the following statement:

**Entry of the amendment to claims 25, 30 and 39.**

Claims 25, 30 and 39 each previously recited that the cellulosic web includes woodpulp fibres in an amount up to 50%. Use of the word "include" normally indicates the presence of the specified material. Despite this language the Examiner has pointed to the lack of a lower bound to assert that the language "includes woodpulp fibres in an amount up to 50%" can

mean the presence of 0% or no woodpulp. Applicant has previously argued that the word include positively recites the presence of some wood pulp in the web material. The present Office communication at page 9 indicates that "if the Applicant incorporated a lower bound, then the claim would positively recite that some level of wood pulp fibers greater than 0 must be present."

In sum, Applicant has consistently maintained that the language of claims 25, 30 and 39 positively recites the presence of wood pulp and the Examiner has counterasserted that the language of these claims does not positively recite the presence of wood pulp. Clearly, the presence of wood pulp in these claims is not a new issue. In essence, this rejection has been over the form of the claim and not the substance.

Applicant has amended claims 25, 30 and 39 to recite that the cellulosic fibres or web includes "at least some woodpulp fibres" in an amount up to 50%. Claims 25, 30 and 39 now unambiguously indicate that woodpulp is present. As stated in MPEP §706.07(e), pp. 700-75, Rev. 1, Feb. 2003: "... amendments complying with objections or requirements as to form are to be permitted after final action in accordance with 37 CFR 1.116(a)." Applicant respectfully asserts that the claim amendment is proper for entry at this stage of prosecution.

**4. The Board should enter and consider Appellant's Rule 116 Amendment as filed on October 4, 2004.**

Appellant's as filed specification and claims explicitly support the presence of wood pulp fibers in some variations of the claimed invention. The record indicates that Examiner Boyd considered at least claims 25 and 30 to require the presence of at least some wood pulp fibers on April 10, 2003. Examiner Boyd searched for references that included wood or wood pulp. Examiner Boyd apparently shifted her position when she cited a new reference against Appellant's claims, which reference she admits does NOT disclose the presence of wood pulp fibers. Examiner Boyd has maintained this shifted position in the face of her original position; the record; the literal language of claims 25, 30 and 39 and Appellant's consistent position throughout this prosecution that given their language claims 25, 30 and 39 must include more than 0% wood pulp

fibers. Examiner Boyd indicated on the record that Appellant should modify the claim language to more positively recite the presence of woodpulp fibers and Examiner Boyd should not now be surprised by Appellant's Response to amend the form, but not the substance, of claims 25, 30 and 39. For the above reasons Appellant respectfully requests that the Board enter and consider the Rule 116 amendment as filed on October 4, 2004.

**B. APPELLANT'S CLAIMS 22 AND 24-36 ARE DEFINITE UNDER 35 U.S.C. §112, SECOND PARAGRAPH.**

Claims 22 and 24-36 were rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. The July 23, 2004 Office communication refers to the October 3, 2003 Office communication for details of this rejection. The October 3, 2003 Office communication states that: "it is unclear what nonwoven webs would possess a lower cross direction wet expansion when compared to a similar web material comprising only the same cellulosic fibers because the Applicant has not set forth a comparative value in the claim."

**1. The legal requirement for claim definiteness.**

35 U.S.C. §112, second paragraph states: "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." Definiteness is a question of law "drawn from the court's performance of its duty as the construer of patent claims." Exxon Research and Engineering v. United States, 265 F.3d 1371, 1376; 60 USPQ2d 1272, 1276 (Fed. Cir.

2001). Thus, . . . the Board should determine whether a construction of the claims is possible by examining the claims themselves. See Johnson Worldwide Assoc. Inc. v. Zebco Corp., 175 F.3d 985, 989, 50 USPQ 2d 1607, 1610 (Fed. Cir. 1999) (citing a “heavy presumption in favor of the ordinary meaning of claim language”). Reference to the specification and prosecution history is appropriate where there is ambiguity in the claims. *Id.* at 989-90. Where the intrinsic evidence “unambiguously describes the scope of a patented invention, reliance on extrinsic evidence is improper.” Biovail Corp. Int’l v. Andrx Pharma., Inc., 239 F.3d 1297, 1300, 57 USPQ2d 1813, 1815 (Fed. Cir. 2001).

“Indefiniteness is objectionable because the patent does not disclose to the public how the discovery, if there is one, can be made useful and how its infringement may be avoided.” Eibel Process Co. v. Minnesota & Ontario Paper Co., 261 U.S. 45, 65 (1923).

The Federal Circuit discussed the definiteness requirement in Solomon v. Kimberley-Clark Corp., 216 F.3d 1372, 1379; USPQ2d 1279, 1282-1283 (Fed. Cir. 2000), stating:

As has been noted in the context of definiteness, the inquiry under section 112, paragraph 2, now focuses on whether the claims, as interpreted in view of the written description, adequately perform their function of notifying the public of the patentee’s right to exclude.

Subsequently, the Federal Circuit addressed the definiteness requirement, stating:

We have stated the standard for assessing whether a patent claim is sufficiently definite to satisfy the statutory requirement as follows: If one skilled in the art would understand the bounds of the claim when read in light of the specification, then the claim satisfies section 112, paragraph 2.

Exxon Research and Engineering v. United States, 265 F.3d 1371, 1375; 60 USPQ2d 1272, 1276 (Fed. Cir. 2001) (internal citation removed). That court further stated “If the meaning of the claim is discernible, even though the task may be formidable and the



conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds.” *Id. at 1375*.

This relevant precedent on claim language is summarized in MPEP section 2173.01.

That section states:

“A fundamental principal contained in 35 U.S.C. 112, second paragraph is that applicants are their own lexicographers. They can define in the claims what they regard as their invention essentially in whatever terms they choose so long as the terms are not used in ways that are contrary to accepted meanings in the art. Applicant may use functional language, alternative expressions, negative limitations, or any style of expression or format of claim which makes clear the boundaries of the subject matter for which protection is sought. As noted by the court in *In re Swinehart*, 160 USPQ 226 (CCPA 1971), a claim may not be rejected solely because of the type of language used to define the subject matter for which protection is sought.”

The MPEP in section 2173.05(g) again reiterates the position that there is nothing inherently wrong with defining some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper. A functional limitation must be evaluated and considered . . .

## **2. Appellant’s claims and specification.**

Pending claim 22 recites in one pertinent part: “A nonwoven web material comprising cellulosic fibres and synthetic fibres, . . .”. Claim 22 is clearly directed to a nonwoven web material comprising both cellulosic fibers and synthetic fibers.

Claim 22 goes on to recite, with bracketed text added: “wherein the {cellulosic fiber and synthetic fiber} web material exhibits lower cross direction wet expansion than a similar web material comprising only the same cellulosic fibres.” This recitation is a comparison of the cross direction wet expansion properties of the inventive cellulosic and synthetic fiber

web material versus a conventional web material comprising the same cellulosic fibers used in the inventive web material but without the synthetic fibers.

- Appellant's specification at page 8, line 23 to page 9, line 6 provides a method for testing wet expansion of a web material.
- Appellant's Example 1, (page 9) provides CD wet expansion data from the center of 3 web material samples: 100% abaca fiber web; 94% abaca fiber and 6% polyester fiber web (Test 1); and 94% abaca fiber and 6% polyester fiber web (Test 2).<sup>1</sup>
- Appellant's Example 1, (page 9) provides CD wet expansion data from an edge of 3 web material samples: 100% abaca fiber web; 94% abaca fiber and 6% polyester fiber web (Test 1); and 94% abaca fiber and 6% polyester fiber web (Test 2).
- Appellant's Example 1, (page 9) provides CD wet expansion data for a maximum to minimum range at 16 positions across 3 web material samples: 100% abaca fiber web; 94% abaca fiber and 6% polyester fiber web (Test 1); and 94% abaca fiber and 6% polyester fiber web (Test 2).
- Appellant's Figure 1 graphically displays CD wet expansion data at 16 positions across 2 web material samples: 100% abaca fiber web; and 94% abaca fiber and 6% polyester fiber web (Test 1).
- Appellant's Example 2, (page 10) provides CD wet expansion data from the center of 2 web material samples: 100% abaca fiber web; and 94% abaca fiber and 6% polyester fiber web.

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<sup>1</sup> Examples 1-3 indicate that the web material was 96% abaca and 6% polyester, which is not possible. The specification at page 8, lines 10-12 indicates that Examples 1 to 3 were produced from 94% abaca fibers and 6% polyester fibers. Example 4 is presumed to be the same 94% abaca, 6% polyester combination.

- Appellant's Example 2, (page 10) provides CD wet expansion data from an edge of 2 web material samples: 100% abaca fiber web; and 94% abaca fiber and 6% polyester fiber web.
- Appellant's Example 2, (page 10) provides CD wet expansion data a maximum to minimum range at 16 positions across 2 web material samples: 100% abaca fiber web; and 94% abaca fiber and 6% polyester fiber web.
- Appellant's Example 3, (page 10) provides CD wet expansion data from the center of 2 web material samples: 100% abaca fiber web; and 94% abaca fiber and 6% polyester fiber web.
- Appellant's Example 3, (page 10) provides CD wet expansion data from an edge of 2 web material samples: 100% abaca fiber web; and 94% abaca fiber and 6% polyester fiber web.
- Appellant's Example 3, (page 10) provides CD wet expansion data a maximum to minimum range at 16 positions across 2 web material samples: 100% abaca fiber web; and 94% abaca fiber and 6% polyester fiber web.
- Appellant's Example 4, (page 11) provides CD wet expansion data (mean) for 2 web material samples: 100% abaca fiber web; and 94% abaca fiber and 6% polyester fiber web.
- Appellant's Example 4, (page 11) provides CD wet expansion data at 16 positions across 2 web material samples: 100% abaca fiber web; and 94% abaca fiber and 6% polyester fiber web.
- The October 22, 2004 Advisory Action on page 2 states:

In response to Applicant's arguments that the language of "wherein the web material exhibits lower cross direction wet expansion than a similar web

material comprising only the same cellulosic fibers” is not indefinite, the Examiner respectfully argues the contrary. In claims 22, 29 and 34, the Applicant only claims a nonwoven web comprising cellulosic fibers and synthetic fibers, but compares the cross direction wet expansion value to a web comprising only cellulosic fibers. The Office is not equipped to do physical testing of the products in the invention and of the prior art, therefore, it is highly suggested that the Applicant provide a quantitative amount for the cross direction wet expansion rather than comparing it qualitatively.

Thus, while the October 3, 2003 and July 23, 2004 Office communications assert that claims 22-36 are legally indefinite, the October 22, 2004 Advisory Action appears to discern the meaning of the disputed text in these claims.

Appellant also notes that the Advisory Action appears to indicate that a quantitative comparison of cross direction wet expansion would be definite. Appellant is unsure as to why a quantitative comparison of cross direction wet expansion would be definite when a qualitative comparison is alleged to be indefinite.

In sum, Appellant's specification provides four examples encompassing more than one hundred (100) tests across more than twenty (20) samples wherein a web material made according to the claims (in the examples - 94% abaca fibers and 6% polyester fibers) is compared to a similar web material comprising only the same cellulosic fibers (100% abaca fibers). Across Appellant's numerous examples, samples and tests, the CD wet expansion of the novel web material is lower than the CD wet expansion of a conventional web material comprising only the same cellulosic fibers. The lower expansion properties of Appellant's inventive web material are also graphically indicated in Figure 1.

**3.     The Board should withdraw the rejection of claims 22 and 24-36 under 35 U.S.C. §112, second paragraph.**

In view of the clear language of Appellant's claims, the disclosure in Appellant's specification including test methods and numerous Examples, samples and tests and the Office communication comments, Appellant respectfully asserts that the pending claims are legally definite as "the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention". Appellant respectfully requests that the Board withdraw this rejection of claims 22 and 24-36 under 35 U.S.C. §112, second paragraph.

**C.            **APPELLANT'S CLAIMS 22 AND 24-44 ARE NOT PRIMA FACIE OBVIOUS UNDER 35 U.S.C. §103(a).****

Claims 22 and 24-44 were rejected under 35 U.S.C. §103(a) as being obvious over International publication WO 95/10190 to Rose et al. in view of U.S. Patent No. 5,705,214 to Ito et al.

**1.     The Examiner has the burden of establishing a *prima facie* case of obviousness within the legal requirements created by the courts.**

The United States Supreme Court in Graham v. John Deere, 383 U.S. 1, 17; 148 USPQ 459, 467 (1966) stated "Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be

ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined."

It is indisputable that in order to properly reach a conclusion as to obviousness pertinent case law requires that "there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination." Interconnect Planning Corp., v. Fell, 724 F.2d 1132, 1143; 227 USPQ 543, 551 (Fed. Cir. 1985). Furthermore, it is considered "insufficient that the prior art disclosed the components of the patented device, either separately or used in other combinations ..."  
Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934; 15 USPQ2d 1321, 1323 (Fed. Cir. 1990); see also M.P.E.P.2145(j)(3). In determining the differences between the prior art and the claims, the question under 35 U.S.C. §103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1537; 218 USPQ 871, 877 (Fed. Cir. 1983). Further, the prior art reference must be considered in its entirety, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1550; 220 USPQ 303, 311 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984); see also M.P.E.P. §2141.02. The burden is on the Examiner to demonstrate that the prior art evidences sufficient suggestion of the desirability of doing what the inventor has done. See M.P.E.P. §2142. At an irreducible minimum, this burden requires this Examiner to apply the facts of the case to "present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). Clearly, the Examiner cannot discharge

himself from this burden by simply declaring all of the elements of an invention, along with the manner of combining these elements, to be well known in the art. Ex parte Stern, 13 USPQ2d 1379, 1381 (Bd. Pat. App. & Inter. 1989). The mere fact that the references can possibly be combined, does not render the resulting combination obvious unless the cited art also suggests the desirability of that combination. In re Mills, 916 F.2d 680, 682; 16 USPQ2d 1430, 1432 (Fed. Cir. 1990).

As summarized in MPEP §2142, “The legal concept of *prima facie* obviousness is a procedural tool of examination which . . . allocates who has the burden of going forward with production of evidence in each step of the examination process.” The MPEP further states “The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.”

To establish a *prima facie* case of obviousness three basic criteria must be met. First there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See M.P.E.P. §2143.

**2. The Examiner has failed to establish a *prima facie* case of obviousness against claims 22 and 24-44.**

In making this rejection the Examiner asserts that “Rose teaches a porous substrate such as a paper comprising natural cellulosic fibers mixed with synthetic fibers” (July 23,

2004 Office communication, page 3, ¶13). This Office communication admits at page 5, ¶13 that “Rose . . . however fails to teach that the synthetic fibers in the porous substrate are selected from polyester, polyester copolymer, polyamide, polyamide copolymer, polyolefin and polyolefin copolymer or a mixture thereof.”

**a. There is no suggestion or motivation to modify the Rose reference.**

The July 23, 2004 Office communication speculates on page 5 that:

It would have been obvious and necessary for one of ordinary skill in the art practicing the invention of Rose to provide the details of the synthetic fiber. As polyester and nylon (polyamide) are commonly employed synthetic fibers which provide reinforcement and heat stability to a casing material, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use polyester or nylon as the synthetic fiber as suggested by Ito in the invention of Rose, motivated by the expectation of successfully practicing the invention of Rose.

The Rose reference at page 4, lines 10-21 states, with underlining added:

Preferably the porous substrate is a wet laid fibrous substrate, most preferably a paper. Most preferably the paper is of a high and uniform permeability (preferably  $100 - 200 \text{ m}^3 \text{ min}^{-1} \text{ m}^{-2}$ ) and of low basis weight (typically 10 – 30 gsm). Preferably also the paper has a tensile ratio (i.e. ratio of machine direction:cross direction strength) of 0.5 - 2.0 more preferably in the range of 1.0 – 1.5. The paper is ideally prepared from “long” fibres (e.g. 5mm) of high aspect ratio (e.g. 300 – 3000). The web's constituent fibers should also exhibit uniform formation and absorbency characteristics. Particularly suitable papers are composed of natural cellulosic fibers typically of the Musa Textilis species (e.g. Abaca). It is also possible to use papers comprised wholly or partially of synthetic fibers.

The Rose reference includes only three Examples. Example 1 (Rose, page 8) is a 100% abaca fiber paper. Example 2 (Rose, page 9) is a 100% abaca fiber paper. Example 3 (Rose, page 9) is a 100% abaca fiber paper. As explained at page 4, lines 18-20 of the



Rose reference, abaca fibers are natural cellulosic fibers. There is no other disclosure in the Rose reference concerning the web fiber composition.

The Rose reference teaches that, with bolding added: “The **web’s constituent fibres** should also exhibit uniform formation and absorbency characteristics.” Clearly, the Rose recitation of “the web’s constituent fibres” is explicitly referring to each fiber and fiber type in the web material and not to properties of the web as a whole; that is, according to Rose each fiber in the web should have uniform formation and absorbency characteristics.

The Rose reference goes on to teach that absorbent fibers, particularly natural cellulosic fibers such as abaca, are “particularly suitable” for use in the process therein.

The Rose reference also states at page 4, lines 20-21 that: It is also possible to use papers comprised wholly or partially of synthetic fibers. Appellant previously submitted copies of the following documents with the Response filed on October 4, 2004. These documents were entered and are present in the PAIR database for this application. These documents include:

- a copy of a portion of a web page from <http://www.uspto.gov/go/classification/uspc162/defs162.htm#C162S157100> (the U.S. PTO website) indicating that class 162, subclass 157.1 defines “synthetic fiber” to include chemically modified cellulose such as regenerated cellulose, e.g. rayon, as well as synthetic resins.
- a copy of a web page from [www.hyperdictionary.com](http://www.hyperdictionary.com) indicating that a synthetic fiber is “created from natural materials or by chemical processes.”
- copies of two web pages from [www.minifibers.com](http://www.minifibers.com) indicating that synthetic fibers include rayon, nylon, polyester, acrylic and polypropylene.

Clearly, the U.S. PTO as well as the art considers the term synthetic fibers to include rayon, nylon, polyester, acrylic and polyolefin materials.

Appellant has also previously submitted with the Response filed on October 4, 2004 two web pages from Washington State University, Department of Apparel, Merchandising, Design and Textiles, located at <http://amdt.wsu.edu/classes/salusso/amt215/amt215/class%20schedule/class%20notes/fiberperformancesummary.pdf> titled "SUMMARY OF TEXTILE FIBER PERFORMANCE". These documents were entered and are present in the PAIR database for this application. These pages indicate that cellulosic fibers, such as the abaca fibers used in the Rose reference, have good absorbency. Synthetic fibers such as rayon also have high absorbency. Contrastingly, other synthetic fibers such as nylon, polyester, acrylic and olefin have low absorbency.

Summarized:

- The Rose reference explicitly teaches that, with bolding added: "The web's **constituent fibres** should also exhibit **uniform** formation and **absorbency characteristics**."
- Cellulosic fibers such as natural abaca fibers and synthetic rayon fibers exhibit uniform absorbency characteristics (good and high absorbency, respectively).
- Synthetic fibers such as nylon, polyester, acrylic and olefin fibers exhibit very different absorbency characteristics from cellulosic fibers (low absorbency vs. good or high absorbency).

Given the explicit Rose teaching that all of the web material constituent fibers should have the same absorbency, there is no suggestion or motivation in the cited references to use the low absorbency synthetic fibers disclosed in the Ito reference with

the good or high absorbency fibers disclosed in the Rose reference. Claims 22 and 24-44 are not obvious over International publication WO 95/10190 to Rose et al. in view of U.S. Patent No. 5,705,214 to Ito et al. and are patentable for at least this reason.

**b. There is no expectation of success in modifying the Rose reference.**

The Rose reference is directed to impregnation of a web material with a liquid binder composition. As would be expected, the Rose reference teaches that the constituent fibers making up that web should have uniform absorbency so that the liquid binder composition will be uniformly absorbed by the web. Adding the low absorbency synthetic fibers of Ito to the good to high absorbency web material of Rose is contrary to the teachings of Rose and logically would be expected to decrease the web material absorbency desired by Rose. A person of ordinary skill in the art would have no expectation of success in modifying the Rose material as proposed in the Office communication. Ito is also silent as to why this teaching in Rose should be modified. Claims 22 and 24-44 are not obvious over International publication WO 95/10190 to Rose et al. in view of U.S. Patent No. 5,705,214 to Ito et al. and are patentable for at least this reason.

**c. The Rose reference teaches away from modification as proposed in the Office communication.**

A reference that teaches away from a claimed invention does not provide the suggestion or motivation needed to anticipate or make obvious a claimed invention. In

fact, the courts have stated that a reference that teaches away from a claimed invention is an indication of the nonobviousness of that invention. "A reference, however, must have been considered for all it taught, disclosures that diverged and taught away from the invention at hand as well as disclosures that pointed towards and taught the invention at hand." Ashland Oil, Inc. v. Delta resins & Refractories, Inc., 776 F.2d 281, 296; 227 USPQ 657, 666 (Fed. Cir. 1985). "One important indicium of nonobviousness is 'teaching away' from the claimed invention by the prior art." In re Braat, 16 USPQ2d 1812, 1814 (Fed. Cir. 1990). The prior art reference must be considered in its entirety, including portions that would lead away from the claimed invention. See MPEP 2141.02.

The Rose reference explicitly teaches at page 4 that: "The web's constituent fibres should also exhibit uniform . . . absorbency characteristics." The Rose reference goes on to teach that absorbent fibers, particularly natural cellulosic fibers (pp. 4 and Examples 1-3), are "particularly suitable" for use in the Rose web material. Thus, the Rose reference explicitly teaches away from adding the low absorbency synthetic fibres of Ito to the web material of Rose. Ito is also silent as to why this teaching in Rose should be modified. Claims 22 and 24-44 are not obvious over International publication WO 95/10190 to Rose et al. in view of U.S. Patent No. 5,705,214 to Ito et al. and are patentable for at least this reason.

Appellant respectfully requests that the Board withdraw this rejection of claims 22 and 24-44 under 35 U.S.C. §103.

**3. The Examiner has failed to establish a *prima facie* case of obviousness against claims 25, 30 and 39 for additional reasons.**

Claim 22 recites in one pertinent part: "A nonwoven web material comprising cellulosic fibres and synthetic fibres . . ." Pending claim 25 recites: "The web material of claim 22 in which the cellulosic fibres include woodpulp fibres in an amount of up to 50% by weight of a total weight of cellulosic and synthetic fibres." Claim 25 as amended in the unentered Rule 116 amendment recites: "The web material of claim 22 in which the cellulosic fibres include at least some woodpulp fibres in an amount of up to 50% by weight of a total weight of cellulosic and synthetic fibres." Claims 30 and 39 recite similar features.

Appellant has consistently maintained the position throughout the prosecution of this application that use of the word "include" in these claims requires the presence of wood pulp in the web.

The July 23, 2004 Office communication on page 3, point 5 admits that "Rose does not specifically teach the use of wood pulp fibers as a cellulosic fiber in the substrate. That Office Communication at page 3 goes on to repeat the statement from a previous Office Communication that Applicants' claims include 0% wood pulp, which 0% is implied in the Rose application so that claim 25 is obvious over the Rose reference. In addressing Appellant's arguments that use of the word include requires the presence of some wood pulp, Examiner Boyd stated starting at page 8, point 8:

In response to Applicants' arguments that claims 25, 30 and 39 imply the presence of wood pulp, the Examiner respectfully argues the contrary. The claims require that the wood pulp fibers are present in "an amount of up to 50% by weight of the total weight of the cellulosic and synthetic fibers". It should be noted that no lower bound has been stated in the claims. Therefore the phrase "of up to 50%" requires only that any numerical value from 0 to 50 would meet the Applicants' requirements. If the Applicant

incorporated a lower bound, then the claim would positively recite that some level of wood pulp fibers greater than 0 must be present.

The Examiner's statement fails to address claim 25 as a whole. Claim 25 recites: "The web material of claim 22 in which the cellulosic fibres include woodpulp fibres in an amount of up to 50% by weight of a total weight of cellulosic and synthetic fibres." Claim 25 clearly states that the cellulosic fibers in the web material "include wood pulp fibres". . . The Examiner's statement focuses on the upper limit recited and fails to address the fact that claim 25 requires the inclusion of wood pulp fibers in the web material.

The Federal Circuit, in discussing claim differentiation, stated that: "There is a rebuttable presumption that different claims are of different scope." Amgen Inc. v. Hoechst Marion Roussel Inc., 314 F.3d 1313, 1326; 65 USPQ2d 1385 (Fed. Cir. 2003). Examiner Boyd's position appears to ignore the doctrine of claim differentiation and the differences between claims 25, 30 and 39 and their respective parent claims as set out by the Federal Circuit.

In sum, Examiner Boyd's position is contrary to her original position (see section VII(A)); the record position (see section VII(A)); the literal language of pending claims 25, 30 and 39 and Appellant's consistent position throughout this prosecution that given their language pending claims 25, 30 and 39 must include more than 0% wood pulp fibers.

a. **The Board should withdraw this rejection of claims 25, 30 and 39.**

Claims 25, 30 and 39 require the presence of some wood pulp in the web material. The Office communication admits that this element of Appellant's claims is not found in

the cited references. Claims 25, 30 and 39 are not obvious over International publication WO 95/10190 to Rose et al. in view of U.S. Patent No. 5,705,214 to Ito et al. and are patentable for at least this reason. Appellant respectfully requests that the Board withdraw this rejection of claims 25, 30 and 39 under 35 U.S.C. §103.

**4. The Examiner has failed to establish a *prima facie* case of obviousness against claims 26-27 and 40-41 for additional reasons.**

The July 23, 2004 Office communication at page 6, ¶2 states that Rose in view of Ito does not include the use of synthetic fibers as specified in Applicant's claims in the amounts specified in claims 26-27 and 40-41. The Office communication, apparently attempting to address the fact that there is no overlap between the synthetic fiber ranges in Applicant's claims and those in the cited references, states:

It should be noted that the amount of cellulosic and synthetic fibers in the substrate are result effective variables; for example, as the amount of cellulosic fibers increases, the web will become more paper-like. As the amount of synthetic fiber increases, the substrate will become more heat stable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to Rose, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the level of cellulosic and synthetic fibers to create a substrate with properly balanced elasticity, thermal stability and strength.

**a. The Office communication reliance on the cited Boesch case is misplaced.**

The citation referred to in the Office communication, at 617 F.2d 272, 276; 205 USPQ 215, 219 (CCPA 1980), states:

**[1]** In the above-quoted passage from '838, we note that lowering the  $N_v$  value of a Co-Cr-Ni alloy and depletion of the metals not consumed in precipitation from the  $N_v$  calculation are expressly suggested. Considering, also, that the composition requirements of the claims and the cited references overlap, we agree with the Solicitor that the prior art would have suggested "the kind of experimentation necessary to achieve the claimed composition, including the proportional balancing described by appellants'  $N_v$  equation." This accords with the rule that discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.

Thus, the decision in the Boesch case relied on 1) the cited reference "expressly" suggesting the relationship between the variable and the result; 2) the claimed ranges and cited reference ranges overlapping; and 3) the prior art suggesting "the kind of experimentation necessary to achieve the claimed composition . . . described by appellants.

The facts of the present situation are completely different from the facts of Boesch.

- As discussed above, the Rose reference fairly teaches away from using ANY amount of the low absorbency fibers of Ito.
- There is no teaching or suggestion in Rose that synthetic fiber concentration affects cross direction wet expansion. The Rose reference DOES teach that impregnating a preferred natural cellulose web material with a liquid dispersion of a polymer and subsequent crosslinking of the polymer affects cross direction stretch.



- The Rose reference does not appear to provide ANY guidance as to the amount of low absorbency synthetic fibers that may be used.
- The Rose reference does not teach or suggest use of the low absorbency synthetic fibers of Ito at about 0.5% to about 20%. There is no overlap between Appellant's claimed synthetic fiber amounts and any teaching or suggestion in the Rose reference.
- Given the teaching in Rose that, with bolding added: "The web's **constituent fibres** should also exhibit uniform . . . absorbency characteristics" a person of ordinary skill would be taught away from "the kind of experimentation necessary to achieve the claimed composition" of Appellant's.

**b. The Board should withdraw this rejection of claims 26-27 and 40-41.**

Appellant respectfully asserts that the Office communication statement that "the amount of cellulosic and synthetic fibers in the fibrous web are result effective variables" under Boesch is contrary to the Boesch jurisprudence and the teachings of the cited Rose reference. Claims 26-27 and 40-41 are not obvious over International publication WO 95/10190 to Rose et al. in view of U.S. Patent No. 5,705,214 to Ito et al. and are patentable for at least this reason. Appellant respectfully requests that the Board withdraw this rejection of claims 26-27 and 40-41 under 35 U.S.C. §103.

**5. The Examiner has failed to establish a *prima facie* case of obviousness against claim 29 for additional reasons.**

Claim 29 recites in one pertinent part: "A method for lowering cross direction wet expansion of a nonwoven web material comprising: mixing cellulosic and synthetic fibres selected from at least one of polyamide fibres, polyamide copolymer fibres, polyester fibres, polyester copolymer fibres, polyolefin fibres and polyolefin copolymer fibres; and forming the mixed fibres into the nonwoven web . . ." As discussed above there is NO teaching or suggestion in the Rose reference of a method of lowering cross direction wet expansion of a nonwoven web material comprising the use of synthetic fibers of the type recited in claim 29. In fact, as also discussed above, the Rose reference fairly teaches away from the use such low absorbency synthetic fibers. Claim 29, and claims dependent therefrom, are not obvious over International publication WO 95/10190 to Rose et al. in view of U.S. Patent No. 5,705,214 to Ito et al. and are patentable for at least this reason. Appellant respectfully requests that the Board withdraw this rejection of claim 29.

**D. THE EXAMINER HAS FAILED TO ADDRESS APPELLANT'S EVIDENCE OF NONOBVIOUSNESS.**

Appellant respectfully asserts that the Examiner has not made a *prima facie* case of obviousness. Assuming, arguendo, that the Examiner's initial rejection of Appellant's claims 22 and 24-44 over the alleged disclosures of Rose and Ito is legally sufficient to constitute *prima facie* obviousness, Appellants assert that Examiner Boyd has failed to properly consider all of the evidence of nonobviousness. In In re Piasecki, the Federal Circuit noted "After a *prima facie* case of obviousness has been established, the burden

of going forward shifts to the applicant. Rebuttal is merely ‘a showing of facts supporting the opposite conclusion’ . . . the examiner must consider all of the evidence anew.” 745 F.2d 1468, 1472; 223 USPQ 785, 788 (Fed. Cir. 1984).

On October 4, 2004 Appellant filed a Response After Final Office Communication. This Response included 6 pages from various sources defining the fiber types and their properties. These pages are present in the PAIR database for this application. Appellant argued against the Examiner’s interpretation of the Rose reference and pointed to these pages for support. Clearly, this Response, supported by evidence, was a “rebuttal” to the Office position.

In the October 22, 2004 Advisory Action, page 2 Examiner Boyd stated:

In Response to Applicant’s argument that Rose requires that the constituent fibers exhibit uniform formation and absorbency characteristics and Ito does not teach synthetic fibers meeting Rose’s absorbency requirement, the Examiner argues that the Applicant’s arguments do not suffice as evidence. The Examiner highly suggests to the Applicant to submit a 37 CFR 1.132 Declaration to establish absorbency properties of the fibers of Ito and Rose.

The Examiner’s statement fails to address the merits and substance of the evidence provided by Appellant in their October 4, 2004 Response. In fact, there has been NO discussion of the papers submitted with the October 4, 2004 Response. Clearly, the Examiner has failed to “consider all of the evidence anew” as legally required. Rather, the Examiner attempts to improperly shift the burden of Response back to Appellant by requiring the filing of a Rule 1.132 Declaration. Appellant respectfully requests that the Board withdraw this rejection of claims 22 and 24-44 for this additional reason.

**E. THE EXAMINER HAS RESORTED TO IMPERMISSIBLE HINDSIGHT TO FIND APPELLANT'S CLAIMS OBVIOUS OVER THE COMBINED ROSE AND ITO REFERENCES.**

35 U.S.C. §103 specifies that the obviousness of an invention is to be determined as of "the time the invention was made." This requires the Examiner to step backward in time and into the shoes worn by the hypothetical person of ordinary skill in the art when the invention was unknown and just before it was made. MPEP §2142. "When applying 35 U.S.C. 103, . . . the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention . . ." Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143, n5; 229 USPQ 182, 187, n5 (Fed. Cir. 1986). The court has further stated "a retrospective view of inherency is not a substitute for some teaching or suggestion supporting an obviousness rejection. In re Rijkaert, 9 F.3d 1531, 1534; 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) citing In re Newell, 891 F.2d 899, 901; 13 USPQ2d 1248, 1250 (Fed. Cir. 1989).

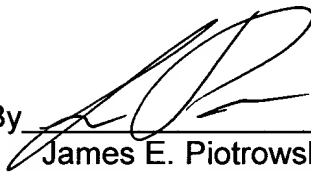
The Rose and Ito references are silent concerning a nonwoven web comprising the fibers recited in Appellant's claims. In fact, as previously discussed, the teachings of Rose would lead a person of ordinary skill in the art away from use of the synthetic fibers recited in Appellant's claims. The only route to find Appellant's claimed web material in the disclosures of Rose and Ito is by impermissibly using Appellants' invention as a blueprint.

Claims 22 and 24-44 are not obvious over International publication WO 95/10190 to Rose et al. in view of U.S. Patent No. 5,705,214 to Ito et al. and are patentable for this additional reason. Appellant respectfully requests that the Board withdraw this rejection of claims 22 and 24-44 for this additional reason.

Respectfully submitted,

Alan Wightman et al

By



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## **APPENDIX A - CLAIMS INVOLVED IN THE APPEAL**

1 - 21 cancelled

22. A nonwoven web material comprising cellulosic fibres and synthetic fibres selected from at least one of polyamide fibres, polyamide copolymer fibres, polyester fibres, polyester copolymer fibres, polyolefin fibres and polyolefin copolymer fibres, wherein the web material exhibits lower cross direction wet expansion than a similar web material comprising only the same cellulosic fibres.

23. (cancelled)

24. The web material of claim 22 in which the cellulosic fibres include abaca fibres, vegetable fibres or mixtures thereof.

25. The web material of claim 22 in which the cellulosic fibres include woodpulp fibres in an amount of up to 50% by weight of a total weight of cellulosic and synthetic fibres.

26. The web material of claim 22 in which the synthetic fibres comprise from 0.5 to 20% by weight of a total weight of cellulosic and synthetic fibres.

27. The web material of claim 22 in which the synthetic fibres comprise from 3 to 9% by weight of a total weight of cellulosic and synthetic fibres.

28. The web material of claim 22 in which the web material is wet-laid from a fibrous mixture containing cellulosic fibres and the synthetic fibres.
29. A method for lowering cross direction wet expansion of a nonwoven web material comprising: mixing cellulosic and synthetic fibres selected from at least one of polyamide fibres, polyamide copolymer fibres, polyester fibres, polyester copolymer fibres, polyolefin fibres and polyolefin copolymer fibres; and forming the mixed fibres into the nonwoven web, wherein the nonwoven web material exhibits lower cross direction wet expansion than a similar web material comprising only the same cellulosic fibres.
30. The method of claim 29 wherein the cellulosic fibres include woodpulp fibres in an amount of up to 50% by weight of a total weight of cellulosic and synthetic fibres.
31. The method of claim 29 in which the step of forming comprises wet-laying the fibre mixture on a papermaking machine.
32. The method of claim 29 comprising impregnating the nonwoven web material with binder.
33. The method of claim 29 further comprising substantially coating the nonwoven web material with a viscose solution and subsequently regenerating cellulose from the viscose solution to form a casing material adapted for the packaging of food products.

34. A bonded casing paper comprising a nonwoven web material comprising cellulosic and synthetic fibres selected from at least one of polyamide fibres, polyamide copolymer fibres, polyester fibres, polyester copolymer fibres, polyolefin fibres and polyolefin copolymer fibres, the web material having lower cross direction wet expansion than a similar web material comprising only the same cellulosic fibres, wherein the web material is bonded with regenerated cellulose or a resin binder or a mixture of resin binders.

35. The bonded casing paper of claim 34 further including impregnation with viscose from which cellulose is thereafter regenerated to form a casing material for packaging of sausage or other meat product or other food products.

36. The web material of claim 34 in which drying of the web material is effected by a plurality of heated cylinders.

37. A casing paper, suitable for the preparation of casing material for the packaging of sausage or other meat product or other food products, which casing paper contains a web material comprising cellulosic fibres and synthetic fibres, the web material being bonded with regenerated cellulose or with a binder resin or mixture of resin binders, wherein the synthetic fibres are selected from at least one of (i) fibres made of an organic polymer selected from polyester, polyester copolymer, polyamide, polyamide copolymer, polyolefin and polyolefin copolymer and (ii) fibres made of a mixture of at least two organic polymers



selected from polyester, polyester copolymer, polyamide, polyamide copolymer, polyolefin and polyolefin copolymer.

38. A casing paper according to claim 37 in which the cellulosic web includes abaca fibres, vegetable fibres or mixtures thereof.

39. A casing paper according to claim 37 in which the cellulosic web includes woodpulp fibres in an amount of up to 50% by weight of a total weight of cellulosic and synthetic fibres.

40. A casing paper according to claim 37 in which the content of synthetic fibres in the web material is from 0.5 to 20% by weight of a total weight of cellulosic and synthetic fibres.

41. A casing paper according to claim 37 in which the content of synthetic fibres in the web material is from 3 to 9% by weight of a total weight of cellulosic and synthetic fibres.

42. A process for preparing casing paper, comprising: forming a web material containing cellulose fibres and synthetic fibres; and impregnating the web material with a resin binder, or a mixture of resin binders, or with viscose, wherein the synthetic fibres are selected from at least one of (i) fibres made of an organic polymer selected from polyester, polyester copolymer, polyamide, polyamide copolymer, polyolefin and polyolefin copolymer and (ii) fibres made of a mixture of the organic polymers.

43. A process according to claim 42, in which the web material is formed by a wet-laying method.

44. A process according to claim 42, comprising drying at least one of the web material or the casing paper by means of a plurality of heated cylinders.

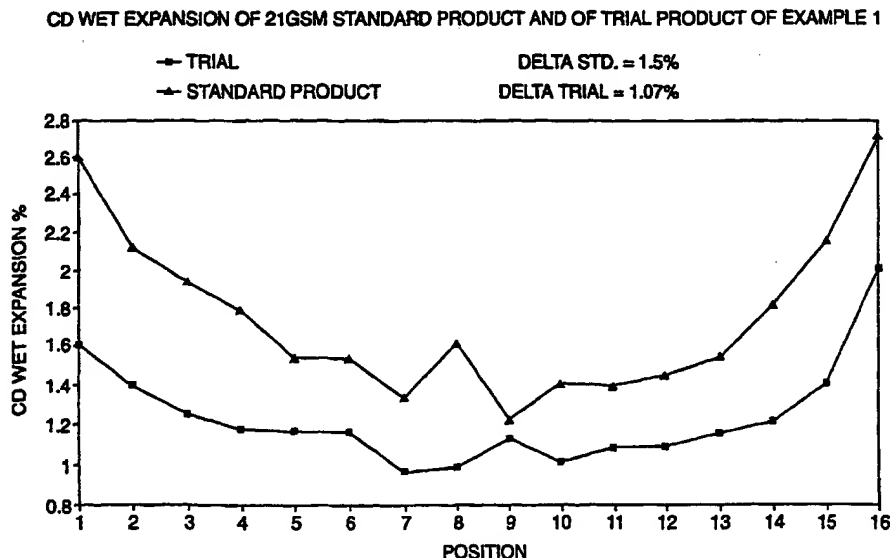
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(54) Title: PAPER AND RELATED PRODUCTS OF IMPROVED WET EXPANSION PROFILE



(57) Abstract

Casing paper is produced by the wet-laying of a web material comprising cellulosic fibres, e.g. abaca fibres, and synthetic fibres, the resultant web material being bonded either with viscose, followed by regeneration of cellulose from the viscose, or with a resin binder or mixture of resin binders. The casing paper may be formed into a tube and impregnated with viscose from which cellulose is thereafter regenerated to form a casing material for the packaging of sausage or other processed meat product or other food products. The inclusion of the synthetic fibres, for example polyamide, polyester or polyolefin fibres, has been found to reduce the variation in wet expansion in the cross direction of the web material.

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**PAPER AND RELATED PRODUCTS OF IMPROVED WET EXPANSION**  
**PROFILE**

*Field of the invention*

5

The present invention relates to a web material containing cellulosic fibres, to casing paper based on such a web material and to casing material prepared from such casing paper and which is suitable for the packaging of sausage or other meat products or other food products.

10

*Background to the invention*

Paper and related cellulosic web-like products are generally produced by processes that include a drying stage. A wet cellulosic material always shrinks if it is dried without  
15 restraint, though the degree of shrinkage varies according to the nature of the material. During drying this natural shrinkage can be countered by the mechanical restraints developed due to the nature of the drying process used. When the drier is a single large glazed heated cylinder (commonly called a "Yankee" drier in the paper industry) the wet web is stuck to the surface of the cylinder and restraint is total, or substantially total, so  
20 that shrinkage across the web is minimal and uniform. In the case of a web dried unrestrained, for example in a hot air tunnel, shrinkage can be high but again is uniform.

Commonly, however, the drying stage is carried out by passing the web around a series of drying cylinders that are heated, usually by steam. Owing to the nature of the mechanical  
25 restraints on the web, primarily due to frictional forces, the degree of shrinkage that occurs in the web during the drying process varies across the width. The greatest shrinkage occurs at the edges of the web and the shrinkage gradually decreases towards the centre where it is at the minimum. The common multi-cylinder drier produces such an effect because restraint near the edges of the cylinders is low but at the centre it is high.

30

The degree of shrinkage that a cellulosic web undergoes during drying has a marked effect on several physical properties of the dried web, particularly the elongation and expansion characteristics. A significant effect is that when shrinkage is high the expansion of the web

on rewetting, termed "wet expansion", is high and when shrinkage is low wet expansion is low. Thus, the cross direction (CD) wet expansion profile of a multi-cylinder dried cellulosic web is of the same form as the shrinkage profile: high at the edges of the web and low at the centre. This type of profile is often termed a "smile".

5

A particular cellulosic web product for which wet expansion is a critical property is fibrous sausage casing base paper (casing paper). This material is normally manufactured from strong, relatively long vegetable fibres such as abaca and is impregnated with a viscose solution, which is thereafter regenerated, or a resin binder formulation such that the solids pick-up is, typically, 5%. This casing paper is then formed into tubes and impregnated with up to four times its own weight of cellulose solids from a viscose solution which is regenerated to form a sausage casing used for packaging meat products. Thus, the casing paper serves to reinforce the casing material which comprises the regenerated cellulose. The sausage casing will be filled (stuffed) with the meat product, usually in the form of a coarse paste, under pressure.

15

When the casing is used as a package for sausage or meat intended to be sliced to form a retail pre-pack it is particularly important that the casing tube expands consistently to the desired diameter so that when the sausage is sliced to a precise thickness, each slice is exactly the same weight and a given number of slices will be exactly the weight desired for the pre-pack. The degree of expansion of the casing at a given "stuffing pressure" is related to the wet expansion of the casing paper; a high expansion paper will give a tube with a relatively high expansion at stuffing pressure.

20

It is therefore a disadvantage of casing paper produced on a machine with multi-cylinder driers that the paper's wet expansion varies across the width and therefore the resultant casing's expansion at stuffing pressure varies according to the position across the machine of the paper from which it was produced.

25

A way of countering this disadvantage is to divide the width of the machine into regions of relatively low and relatively high wet expansion and to sell paper from these regions essentially as separate products with different wet expansion specifications. These products might be labelled, for example, as "edge cut" and "centre cut". The use of this

30

technique, while technically satisfactory, does give problems in the planning of casing paper production because the different "cuts" have to be balanced in the required volume; there is also the added complexity for the casing tube producer in the area of inventory control. It would seem that using the previously mentioned "Yankee" drier would  
5 overcome the problem but, because the web is dried under virtually total restraint, the expansion is too low and results in what is known as too "stiff" a casing. It has been suggested that a "through drier" would overcome the profile problem (see U.S. Patent No. 3 822 182); such a drier does create a more uniform profile but again, because of the comparatively high drying restraint, the product lacks elongation. There is hence still a  
10 need in the art for a casing paper with a reduced CD wet expansion profile but which can be produced whilst still using a multi-cylinder drying regime and thus retaining the advantages of that method.

#### *Summary of the invention*

15

It has now been found that improvements in the CD wet expansion profile can be achieved by the forming of a cellulosic web, e.g. one made primarily from abaca fibres, into which there is incorporated synthetic fibres, typically polyester, generally in a relatively small quantity. Preferably the cellulosic web is a wetlaid web.

20

Thus, in one aspect, the present invention provides a web material comprising cellulosic fibres and synthetic fibres; in a second aspect the present invention provides a process, preferably a wetlaying process, for producing such a web material.

25 In another aspect, the present invention provides the use, in a web material comprising cellulosic fibres, of synthetic fibres for reducing variations in wet expansion in the cross direction of the web material.

In yet another aspect, the present invention provides a casing paper, suitable for the  
30 preparation of casing material for the packaging of sausage or other meat product, which casing paper contains a web material comprising cellulosic fibres and synthetic fibres, the web material being bonded with regenerated cellulose or with a resin binder or mixture of resin binders.

In a further aspect, the present invention provides a process for preparing casing paper which comprises forming, preferably by wet-laying, a web containing cellulose fibres and synthetic fibres, and impregnating the web with a resin binder, or mixture of resin binders,  
5 or with viscose.

In yet a further aspect, the present invention provides a casing material for the packaging of sausage or other meat product, which comprises material, e.g. in the form of a sheet or a tube, comprising regenerated cellulose in which there is embedded a casing paper  
10 according to this invention or a casing paper prepared by a process according to this invention.

***Brief description of the drawing***

15 The accompanying figure is a graphical representation of the variation of wet expansion along the CD (i) of an exemplary sample of casing paper having a basis weight (grammage) of 21 m<sup>2</sup>/g and (ii) of, for comparison, a standard casing paper of similar basis weight.

20 ***Description of exemplary embodiments***

The cellulosic fibres are generally vegetable fibres, preferably long vegetable fibres, such as long, lightweight nonhydrated fibres of the Musa type. Typically, the average fibre lengths will be from 4 to 15 mm but the presence of shorter or longer fibres is not  
25 precluded. Exemplary vegetable fibres are sisal, flax, jute or preferably, abaca. However, the cellulosic web may also comprise woodpulp fibres, typically in an amount of up to 50% by weight of the total fibre content.

The synthetic fibres are generally of a man-made organic polymer or mixture of man-made  
30 organic polymers, e.g. polyesters (e.g. polyethylene terephthalate), polyamides (e.g. poly(hexamethylene adipamide) or polycaproamide, or nylon) or polyolefins (e.g. polyethylene or polypropylene). Fibres made of copolymers also come into consideration. A mixture of two or more types of synthetic fibre may, of course, be used.



Preferred synthetic fibres have a high wet modulus. Synthetic fibres having a low melting point, e.g. polypropylene, will generally not be used when the casing material has to be exposed to high temperatures, as when sausage packaged therein is cooked.

5

The synthetic fibres preferably have an average fibre length of 2 to 20 mm, more preferably 5 to 12 mm. They preferably have a linear density of 0.5 to 6.7 dtex, more preferably 1.7 to 5 dtex.

- 10 The proportion of synthetic fibres in the web need not be high and will generally be in the range of from 0.5 to 20% by weight of the total fibre content. To maintain other strength characteristics at high values it is preferred to employ the synthetic fibre at a level of no more than 10% by weight, although the level is preferably at least 1%. A content of synthetic fibre of from 3 to 9% by weight of total fibre content in the web is particularly  
15 preferred. The synthetic fibre should in general be uniformly or substantially uniformly distributed in the web.

- Methods for producing cellulosic webs suitable for use as casing paper are known in the art and can be readily adapted to the present invention by the incorporation into the fibre  
20 furnish of the required proportion of synthetic fibre. Wetlaying methods of web formation are preferred but in principle dry-laid, e.g. air-laid, webs can be used in the practice of this invention.

- The web may also be produced as a two-phase material in which the two phases each  
25 contain both the cellulosic (especially natural cellulosic) fibres and the synthetic fibres but in different proportions. The proportions for the total web, however, are preferably within the ranges specified above. This embodiment permits the production of casing paper that has a high level of synthetic, e.g. polyester, fibre on one face. Methods of producing two-phase webs are known – see US-A-2 414 833, US-A-4 460 643, GB-A-1542575 and WO-  
30 A-97/04956, the teaching in each of which is incorporated herein by reference – and can be readily adopted for the production of two-phase webs according to the present invention.

After formation the web may (if appropriate) be dried, at least partially and preferably substantially fully, and thereafter, impregnated with a viscose solution, dried and the viscose regenerated with dilute acid, normally sulfuric acid, washed and dried. For example, the paper web may be saturated with a dilute viscose solution, for example a  
5 solution obtained by diluting a solution containing 7% by weight of cellulose (as cellulose xanthate) and 6% by weight of sodium hydroxide to 1% cellulose content. The resultant viscose-saturated web is then dried and the cellulose in the viscose may then be regenerated by passing the web through an acidic regenerating bath containing, for example, a 1 to 8% aqueous sulfuric acid solution. The web may then be washed free of  
10 acid and dried in order to produce a paper web impregnated with acid-regenerated cellulose. This casing paper is then generally formed into rolls ("master rolls").

Alternatively, after formation the web may (if appropriate) be dried, at least partially and preferably substantially fully, and thereafter treated with a resin based binder and dried  
15 (once more). The binder may, of course, be a formulation comprising two or more components. For example, US-A-3,484,256 discloses a process for the production of casing paper in which a fibrous web is bonded with a cationic thermosetting resin and a polyacrylamide resin. Another example of a resin-based binder formulation is disclosed in GB-A-1,536,216, according to which casing paper may be made by treating the fibres of a  
20 fibrous paper web with a water-soluble cationic, thermosetting, epihalohydrin-containing resin (e.g. a polyamide-epichlorohydrin or polyamine-polyamide-epichlorohydrin resin, for example Kymene 557, ex Hercules), a non-viscose film-forming material (e.g. a cellulose ether such as hydroxyethyl cellulose, methyl cellulose, hydroxypropyl cellulose or sodium carboxymethyl cellulose, polyvinyl alcohol, starch, starch derivatives or natural gums) and  
25 a polyalkylene imine, for example polyethylene imine. Yet another possibility is the binder system disclosed in US-A-5,300,319, according to which a fibrous base web is compressed and then treated with a solution of a non-viscose bonding agent, in particular a bonding agent selected from polyvinyl alcohol, chitins (especially de-acetylated chitins), polyacrylamides, alginates, cellulose based materials (such as carboxymethyl cellulose, methyl cellulose, hydroxyethyl cellulose, hydroxypropylmethyl cellulose or hydroxypropyl  
30 cellulose), cationic starches, anionic starches, acrylic latexes, modified proteins, vinyl acetate ethylene emulsions and vinyl acrylic emulsions. In EP-A-0,369,337, a sausage

casing is described which contains a cellulose fibre mat sized with cellulose aminomethanate.

The drying in all cases can be carried out on multi-cylinder steam heated driers. The product from this process, which would have low variation of wet expansion in the CD, could be used as a fibrous base for a viscose based sausage or meat casing. Thus, for example, casings for the packaging of processed meats, e.g. sausage, may be manufactured from the casing paper by cutting it into strips which are then folded to form tubes. The tubes may be saturated with an alkaline viscose solution, e.g. one containing 7% by weight of cellulose and 6% by weight of sodium hydroxide. The cellulose in the viscose may then be regenerated by means of an acidic regenerating bath containing, for example, dilute sulfuric acid and possibly such salts as sodium sulfate or ammonium sulfate. The tube is then passed through one or more baths in order to wash out the acid and the salts. If desired, the tube may be passed through an aqueous bath which contains a plasticizer, e.g. glycerine, for the regenerated cellulose. The tube may then be dried by passing it through a heated chamber (the tube being in an inflated state) to give a cellulosic tubing which has embedded therein a paper web. This tubing may then be stuffed with a processed meat product under pressure. A process of this type is described in detail in US-A-3,135,613. A process in which the inner wall of a tubular regenerated cellulosic casing is treated with a cationic thermosetting resin is disclosed in US-A-3,378,379.

The teaching in each of the aforesaid US Patents, in the aforesaid European Patent Application and in the aforesaid British Patent is incorporated herein by reference.

A web of this invention could also be envisioned as having application in other end uses requiring relatively uniform wet expansion at different positions across the web. In such application, different cellulosic fibres may be used, the impregnants might be different or might be omitted or different forms of treatment might be employed.

Although the Applicant does not wish to be bound by theory, it is postulated that the synthetic fibres in the web, are much less susceptible to dimension changes on wetting or drying than cellulose and this greater dimensional stability is transferred to the web as a whole and results in a lessening of the difference in shrinkage and regrowth behaviour of

the web edges compared to the web centre. It has also been found that webs prepared according to the present invention can exhibit low variation in CD wet expansion whilst retaining adequate expansion for sausage-stuffing and like operations. This avoidance of "stiffness" is an additional advantage in certain applications.

5

The present invention is further illustrated in and by the following Examples.

### *Examples*

- 10 In Examples 1 to 3, casing paper has been produced using a conventional wetlaid inclined wire forming process from 100% abaca fibre on the one hand and 94% abaca fibre and 6% 3.3 dtex, 6 mm precision cut polyester fibre on the other hand. The polyester was available under the trade name "Grillon NV2". All fibre webs have been treated with viscose solution so as to achieve a 5% cellulose pick-up and the viscose has then been regenerated
- 15 with dilute sulphuric acid and washed so as to achieve a final product pH of about 4.9. Three drying stages were employed: after wet-laying, after viscose saturation, and after the regeneration step.

The test methods used in Examples 1 to 4 were:

- 20 • Grammage: ISO 536 using a sample size 203 mm (8 inches) square.
- Tensile strength: ISO 1924-2.
- Wet Mullen bursting strength: ISO 3689 except that the soaking time is one minute.
- Wet expansion:
- A constant rate of extension tensile tester (such as would be used for ISO 1924-2) was
- 25 set up for the following test conditions:
- Test speed = 25.4 mm/min. (1 inch/min.)
- Gauge length = 127 mm (5 inches)
- Pre-load = 0.
- A 25.4 mm (1 inch) sample strip was clamped in the jaws, the tester was started and
- 30 stopped when the load was between 0.02 and 0.04 N. Three or four bursts of deionised water were sprayed onto the sample from a hand sprayer in order to soak the sample. The tester was restarted and the wet expansion was read off as the elongation when the load was at 0.1 N.

Wet expansion is expressed as a percentage of the gauge length (sample length before the test was started).

- In the data tables, the wet expansion at the centre and the edge are given. Each of these measures was taken at two preset positions across the width. Also included is the maximum to minimum range (in absolute %) of a cross machine profile measured at 16 equally spaced positions.

- 10 Test data for the examples are tabulated below:

**Example 1 (2 tests of the invention): target grammage 21 g/m<sup>2</sup>**

Property	100% abaca Standard	96% abaca, 6% polyester	
		Test 1	Test 2
Grammage (g/m <sup>2</sup> )	20.84	21.29	21.56
MD tensile strength (N/m)	1841	1682	1768
CD tensile strength (N/m)	1235	1025	1112
Wet burst (Kpa)	42	47	43
CD wet expansion, centre (%)	1.35	1.18	0.93
CD wet expansion, edge (%)	2.22	1.86	1.57
CD wet expansion range, 16 positions (%)	1.5	1.07	0.68

- 15 Figure 1 shows the 16 position profiles of CD wet expansion for the standard material and the material of Test 1.

**Example 2: target grammage 19 g/m<sup>2</sup>**

Property	100% abaca	96% abaca, 6% polyester
Grammage (g/m <sup>2</sup> )	19.03	19.1
MD tensile strength (N/m)	1667	1474
CD tensile strength (N/m)	1006	898
Wet burst (Kpa)	48	34
CD wet expansion, centre (%)	1.58	1.19
CD wet expansion, edge (%)	2.7	1.8
CD wet expansion range, 16 positions (%)	1.28	0.82

**5 Example 3: target grammage 17 g/m<sup>2</sup>**

Property	100% abaca	96% abaca, 6% polyester
Grammage (g/m <sup>2</sup> )	17.05	17.31
MD tensile strength (N/m)	1338	1248
CD tensile strength (N/m)	908	765
Wet burst (Kpa)	38	34
CD wet expansion, centre (%)	1.4	1.02
CD wet expansion, edge (%)	2.54	1.55
CD wet expansion range, 16 positions (%)	1.55	0.84

All the examples show that material produced by the method of the invention has a reduced absolute CD wet expansion but the difference between the highest and lowest values by both methods of measurement is significantly reduced. Though there has been a reduction in the absolute value of wet expansion in these examples, it is still possible to control this by control of the degree of stretch applied to the paper during drying. Though these levels of stretch (often termed "draw") cannot be quantified, a comparison of Tests 1 and 2 of Example 1 illustrates that wet expansion level can be controlled. The material of

the invention also has a reduced tensile strength but the wet bursting strength does not show a significant change.

**Example 4: target grammage 21g/m<sup>2</sup>**

- 5 In this example casing paper has been produced using the resin impregnation process of US-A-5,300,319. Two drying stages were employed: after wet-laying and after the impregnation with resin.

Property	100% abaca	96% abaca, 6% polyester
MD tensile strength (N/m)	1835	1699
CD wet expansion, mean (%)	1.5	0.96
CD wet expansion range, 16 positions (%)	1.36	1

10

**Example 5:**

- Casing paper manufactured according to Example 2 was formed into casing tubes with a nominal diameter of 70 mm. The diameter of the tubes was then measured when the
- 15 internal pressure was 21 kPa. For casing paper taken from the centre of the machine which has a CD wet expansion of 0.9%, the diameter under pressure was 76.5 mm; for paper taken from the edge of the machine which had a CD wet expansion of 1.3%, the diameter under pressure was 77.2 mm. (The CD wet expansion values in this Example were measured by a slightly different method to that used in Example 2: this, coupled with
- 20 sampling differences, may explain the differences between the values quoted in this Example and those quoted in Example 2.) For a 70 mm nominal diameter casing tube the diameter tolerance under pressure is 74.6 mm to 77.6 mm so that paper from any part of the paper machine could have been used to produce this size of casing. If paper made by the prior art method had been used then paper from the edge of the machine would have
- 25 been outside the tolerance. It should be noted that paper made according to the prior art with a CD wet expansion as low as 0.9% would produce casings with a diameter under pressure below the lower tolerance limit; the paper of the invention is not as "stiff" as the prior art material.

It will, of course, be understood that the present invention has been described above purely by way of example and that modifications of detail can be made within the scope of the invention.

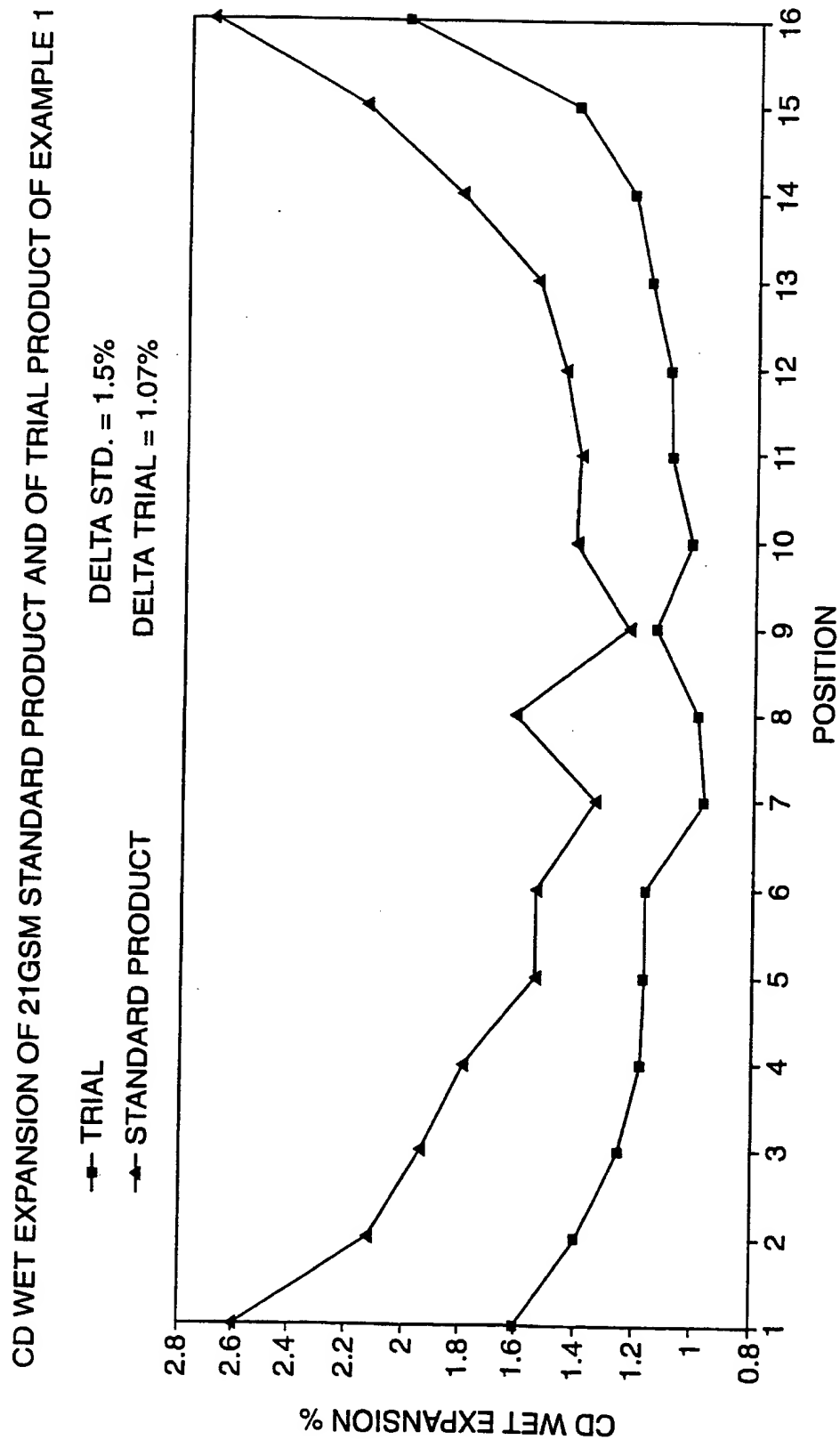


**CLAIMS**

1. The use, in a web material comprising cellulosic fibres, of synthetic fibres for reducing variations in wet expansion in the cross direction of the web material.  
5
2. The use according to claim 1, in which the synthetic fibres are selected from polyamide, polyester and polyolefin fibres.
3. The use according to claim 1 or 2, in which the cellulosic web includes abaca  
10 and/or other vegetable fibres.
4. The use according to claim 1, 2 or 3, in which the cellulosic web includes woodpulp fibres in an amount of up to 50% by weight of the total of cellulosic and synthetic fibres.  
15
5. The use according to any of claims 1 to 4, in which the content of synthetic fibres in the web material is from 0.5 to 20% by weight of the total of cellulosic and synthetic fibres.
- 20 6. The use according to claim 5, in which the said content of synthetic fibres is from 3 to 9% by weight.
7. The use, according to any of claims 1 to 6, in which the web material is wet-laid from a fibrous mixture containing cellulosic fibres and the synthetic fibres.  
25
8. The use, according to any of claims 1 to 7, in which the web material is casing paper and is bonded with regenerated cellulose or with a resin binder or mixture of resin binders.
- 30 9. The use, according to claim 8, in which the bonded casing paper is impregnated with viscose from which cellulose is thereafter regenerated to form a casing material for the packaging of sausage or other meat product or other food products.

10. The use according to any of claims 1 to 9, in which drying of the said web material and/or of the bonded casing paper is effected by means of a plurality of heated cylinders.
11. A casing paper, suitable for the preparation of casing material for the packaging of  
5 sausage or other meat product or other food products, which casing paper contains a web material comprising cellulosic fibres and synthetic fibres, the web material being bonded with regenerated cellulose or with a binder resin or mixture of resin binders.
12. A casing paper according to claim 11, in which the synthetic fibres are selected  
10 from polyamide, polyester and polyolefin fibres.
13. A casing paper according to claim 11 or 12, in which the cellulosic web includes abaca and/or other vegetable fibres.
- 15 14. A casing paper according to claim 11, 12 or 13, in which the cellulosic web includes woodpulp fibres in an amount of up to 50% by weight of the total of cellulosic and synthetic fibres.
15. A casing paper according to any of claims 11 to 14, in which the content of  
20 synthetic fibres in the web material is from 0.5 to 20% by weight of the total of cellulosic and synthetic fibres.
16. A casing paper according to claim 15, in which the said content of synthetic fibres is from 3 to 9% by weight.
- 25 17. A process for preparing casing paper which comprises forming a web material containing cellulose fibres and synthetic fibres, and impregnating the web material with a resin binder, or mixture of resin binders, or with viscose.
- 30 18. A process according to claim 17, in which the web material is formed by a wet-laying method.

19. A process according to claim 17 or 18, which is directed to the preparation of a casing paper according to any of claims 12 to 16.
20. A process according to claim 17, 18 or 19, in which drying of the web material  
5 and/or of the casing paper is effected by means of a plurality of heated cylinders.
21. A casing material for the packaging of sausage or other meat product or other food products, which comprises material, e.g. in the form of a sheet or tube, comprising regenerated cellulose in which there is embedded a casing paper according to any of claims  
10 11 to 16 or a casing paper prepared by a process according to any of claims 17 to 20.

**FIG. 1**

**Abstract**

**Jennifer A Boyd**

1771

[illegible]

Class	Subclass	Date	Examiner

[illegible]

**Search Notes**

Application No.

09/869,745

Examiner

Jennifer A Boyd

Applicant(s)

WIGHTMAN ET AL.

Art Unit

1771

**SEARCHED**

Class	Subclass	Date	Examiner
426	332	9/29/03	JB
426	105	9/29/03	JB
426	135	9/29/03	JB
442	327	9/29/03	JB
162	157.7	9/29/03	JB
162	123	9/29/03	JB

**INTERFERENCE SEARCHED**

Class	Subclass	Date	Examiner

**SEARCH NOTES  
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
East Text Search	9/29/2003	JB

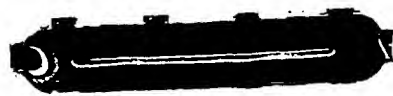
L Number	Hits	Search Text	DB	Time stamp
1	235	442/327	USPAT	2003/04/04 10:46
-	171	((meat or sausage) near3 casing) and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene)	USPAT	2003/04/03 15:50
-	0	((meat or sausage) near3 casing) and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and ((wet-laid) or wetlaid)	USPAT	2003/04/03 10:32
-	5	((meat or sausage) near3 casing) and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and ((wet-laid) or wetlaid or (wet adj laid))	USPAT	2003/04/03 10:33
-	35	((meat or sausage) near3 casing).ab. and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene)	USPAT	2003/04/03 10:33
-	13	((meat or sausage) near3 casing).ab. and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and (expansion or expand\$4)	USPAT	2003/04/03 15:43
-	31	((meat or sausage) near3 casing).ab. and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and (resin or impregn\$5)	USPAT	2003/04/03 12:41
-	5	"819725"	USPAT; EPO; JPO	2003/04/03 12:45
-	10	"712889"	USPAT; EPO; JPO	2003/04/03 12:48
-	7	"531097"	USPAT; EPO; JPO	2003/04/03 12:53
-	4	"2128613"	USPAT; EPO; JPO	2003/04/03 12:53
-	12	"2128613"	USPAT; EPO; JPO; DERWENT	2003/04/03 12:53
-	17	"1091105"	USPAT; EPO; JPO; DERWENT	2003/04/03 12:55
-	20	"4417244"	USPAT; EPO; JPO; DERWENT	2003/04/03 12:57
-	472	(426/332).CCLS.	USPAT	2003/04/03 12:58
-	3	((426/332).CCLS.) and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and (resin or impregn\$5)	USPAT	2003/04/03 15:35
-	0	((426/332).CCLS.) and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and viscose	USPAT	2003/04/03 12:58
-	1	((426/332).CCLS.) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and viscose	USPAT	2003/04/03 12:59
-	62	((426/332).CCLS.) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene)	USPAT	2003/04/03 12:59
-	8	((426/332).CCLS.) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and casing	USPAT	2003/04/03 13:00

-	5363	(polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and casing and (cellulosic or cellulose or cotton or wood)	USPAT	2003/04/03 13:01
-	5696	(polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and casing and (cellulosic or cellulose or cotton or (wood adj pulp) or abaca or vegetable)	USPAT	2003/04/03 13:01
-	281	(polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and casing and (cellulosic or cellulose or cotton or (wood adj pulp) or abaca or vegetable) and viscose	USPAT	2003/04/03 13:02
-	90	(polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and casing and (cellulosic or cellulose or cotton or (wood adj pulp) or abaca or vegetable) and viscose and (nonwoven or non-woven or (non adj woven))	USPAT	2003/04/03 13:02
-	159	(polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and casing and (cellulosic or cellulose or cotton or (wood adj pulp) or abaca or vegetable) and viscose and (nonwoven or non-woven or (non adj woven) or web)	USPAT	2003/04/03 13:16
-	157	(polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and casing and (cellulosic or cellulose or cotton or (wood adj pulp) or abaca or vegetable) and viscose and (nonwoven or non-woven or (non adj woven) or web)	USPAT	2003/04/03 13:17
-	28	(polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and casing and ((wood adj pulp)) and viscose and (nonwoven or non-woven or (non adj woven) or web)	USPAT	2003/04/03 13:43
-	15	markulin and john	USPAT; EPO; DERWENT	2003/04/03 13:42
-	1	"4356200".PN.	USPAT	2003/04/03 13:36
-	1	"4623566".PN.	USPAT	2003/04/03 13:36
-	1	"4762564".PN.	USPAT	2003/04/03 13:36
-	1	"5295514".PN.	USPAT	2003/04/03 13:38
-	67	(162/157.7).CCLS.	USPAT	2003/04/03 13:43
-	2	((162/157.7).CCLS.) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and ((wood adj pulp)) and viscose	USPAT	2003/04/03 13:44
-	202	(162/123).CCLS.	USPAT	2003/04/03 15:35
-	53	((162/123).CCLS.) and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene)	USPAT	2003/04/03 15:36
-	1094	(cotton or cellulose or (wood adj pulp)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and (wetlaid or wet-laid or wet-lay\$3 or wetlay\$3 or waterlay\$3 or waterlaid)	USPAT	2003/04/03 15:38



-	23	(cotton or cellulose or (wood adj pulp)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and (wetlaid or wet-laid or wet-lay\$3 or wetlay\$3 or waterlay\$3 or waterlaid) and (sausage or meat)	USPAT	2003/04/03 15:41
-	31	(cotton or cellulose or (wood adj pulp)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and (wetlaid or wet-laid or wet-lay\$3 or wetlay\$3 or waterlay\$3 or waterlaid) and (sausage or meat)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/04/03 15:42
-	463	(cotton or cellulose or (wood adj pulp)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and (wetlaid or wet-laid or wet-lay\$3 or wetlay\$3 or waterlay\$3 or waterlaid) and ((paper adj mak\$5) or papermak\$5)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/04/03 15:43
-	9	((meat or sausage) near3 casing).ab. and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and (expansion or expand\$4) and impregn\$5	USPAT	2003/04/03 15:43
-	1	"1552422".PN.	USPAT	2003/04/03 15:46
-	1	"2039303".PN.	USPAT	2003/04/03 15:47
-	1	"2039307".PN.	USPAT	2003/04/03 15:47
-	1	"2961323".PN.	USPAT	2003/04/03 15:47
-	9	((meat or sausage) near3 casing) and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and impregn\$6 and ((water or wet) adj (laid or lay\$3))	USPAT	2003/04/03 15:52
-	9	((meat or sausage or food) near3 casing) and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and impregn\$6 and ((water or wet) adj (laid or lay\$3))	USPAT	2003/04/03 15:52
-	30	((meat or sausage or food) near3 (package or case or casing)) and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and impregn\$6 and ((water or wet) adj (laid or lay\$3))	USPAT	2003/04/03 16:13
-	4	"5942354"	USPAT	2003/04/03 16:05
-	1	"3973067".PN.	USPAT	2003/04/03 16:07
-	1	"4234623".PN.	USPAT	2003/04/03 16:08
-	1	"3980497".PN.	USPAT	2003/04/03 16:08
-	1	"3322661".PN.	USPAT	2003/04/03 16:09
-	1	"3427206".PN.	USPAT	2003/04/03 16:09
-	1	"4378414".PN.	USPAT	2003/04/03 16:09
-	1	"4741979".PN.	USPAT	2003/04/03 16:09
-	1	"4741979".PN.	USPAT	2003/04/03 16:09

-	1	"5134174".PN.	USPAT	2003/04/03 16:09
-	1	"5634914".PN.	USPAT	2003/04/03 16:09
-	1	"5462820".PN.	USPAT	2003/04/03 16:09
-	1	"5634914".PN.	USPAT	2003/04/03 16:10
-	1	"5700599".PN.	USPAT	2003/04/03 16:10
-	1	"5700600".PN.	USPAT	2003/04/03 16:10
-	51	(battery or ((meat or sausage or food) near3 (package or case or casing))) and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and impregn\$6 and ((water or wet) adj (laid or lay\$3))	USPAT	2003/04/03 16:19
-	225	(battery or cell or ((meat or sausage or food) near3 (package or case or casing))) and (cotton or (wood)) and (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene) and impregn\$6 and ((water or wet) adj (laid or lay\$3))	USPAT	2003/04/03 16:20
-	31	((wood adj pulp) same (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene)) and (impregn\$6) and ((water or wet) adj (laid or lay\$3)) and viscose	USPAT	2003/04/03 16:31
-	137	((wood adj pulp) same (polyamide or nylon or polyester or PET or polyolefin or polypropylene or polyethylene)) and (impregn\$6) and ((water or wet) adj (laid or lay\$3)) and resin	USPAT	2003/04/03 16:32



SEARCHED			
Class	Sub.	Date	Exmr.
426	332	4/3/03	JB
442	327	4/4/03	JB
162	157.7	4/3/03	JB
	12B	4/3/03	JB

INTERFERENCE SEARCHED			
Class	Sub.	Date	Exmr.

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	Date	Exmr.
ENST Text	4/3/03	JB
Search	4/4/03	
Search report	4/3/03	JB

(RIGHT OUTSIDE)

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UNITED STATES  
PATENT AND  
TRADEMARK OFFICE

FEBRUARY 20, 2002

PTAS

Under Secretary of Commerce For Intellectual Property and  
Director of the United States Patent and Trademark Office  
Washington, DC 20231  
www.uspto.gov

ALIX, YALE & RISTAS, LLP  
JAMES E. PIOTROWSKI  
750 MAIN STREET-SUITE 1400  
HARTFORD, CT 06103-2721



\*101933005A\*

UNITED STATES PATENT AND TRADEMARK OFFICE  
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 12/27/2001

REEL/FRAME: 012402/0460  
NUMBER OF PAGES: 3

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:

WIGHTMAN, ALAN

DOC DATE: 07/11/2001

ASSIGNOR:

STONE, JEREMY JAMES

DOC DATE: 07/11/2001

ASSIGNEE:

AHLSTROM DEXTER LLC  
TWO ELM STREET  
WINDSOR LOCKS, CONNECTICUT

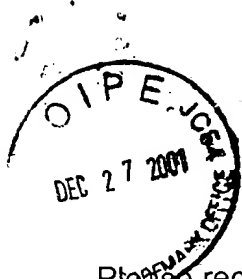
SERIAL NUMBER: 09869745  
PATENT NUMBER:  
PCT NUMBER: GB9904418

FILING DATE: 09/28/2001  
ISSUE DATE:

JEEVON JONES, EXAMINER  
ASSIGNMENT DIVISION  
OFFICE OF PUBLIC RECORDS

158 17 765

mo



01-03-2002



ONLY

101933005

Please record the attached original Assignment.

1. Name of conveying party:

- Alan WIGHTMAN
- Jeremy James STONE

2. Name and address of receiving party:

Name: AHLSTROM DEXTER LLC

Street Address: Two Elm Street

City, State, ZIP: Windsor Locks, Connecticut

Country: US

State/Country of Corporation: Delaware/US

3. Nature of Conveyance: Assignment

Execution Date: July 11, 2001

4. International Application under the Patent Corporation Treaty- Serial Number:

PCT/GB99/04418, Filed on 23 December, 1999

5. Name and address of party to whom correspondence document should be mailed:

James E. Piotrowski  
Alix, Yale & Ristas, LLP  
750 Main Street – Suite 1400  
Hartford, CT 06103-2721

6. Total number of applications involved: 1

7. Total fee enclosed: \$40.00. If this amount is incorrect, please charge or credit the difference to Deposit Account No. 16-2563.

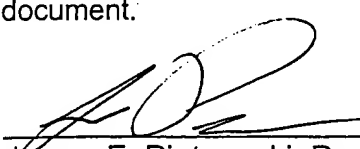
8. Total number of pages including cover sheet, attachments and documents: 3

9) To the best of my knowledge and belief, the foregoing information is true and correct and any copy submitted is a true copy of the original document.

02/2002 LHUELLER 00000053 PCTGB9904418

FC:581

40.00 OP

  
James E. Piotrowski, Reg. No. 43,860  
Attorney For Applicant

Date: 11/15/01  
Attorney's Docket No. DEXNON/095/PC/US

**ASSIGNMENT**

WHEREAS, we, Alan WIGHTMAN residing at 38 Lindisfarne Gardens, Berwick-upon-Tweed, Northumberland TD15 2YA, United Kingdom, and Jeremy James STONE residing at Kirkbank, Paxton, Berwick-upon-Tweed, Northumberland TD15 1TE, United Kingdom, respectfully have invented new and useful improvements in:

**PAPER AND RELATED PRODUCTS OF IMPROVED WET EXPANSION PROFILE**

for which we have made International Application under the Patent Corporation Treaty, which application was filed on 23 December 1999 under Serial No. PCT/GB99/04418; and

WHEREAS, Ahlstrom Dexter LLC., having a place of business at Two Elm Street, Windsor Locks, CT, United States of America, is desirous of acquiring the entire right, title and interest in and to said improvements within the United States and any Letters Patent of the United States which may be granted thereon;

NOW, THEREFORE, TO ALL WHOM IT MAY CONCERN, be it known that for and in consideration of the sum of One (1) Dollar to us in hand paid and other good and valuable consideration, receipt of which is hereby acknowledged, we, the said Alan WIGHTMAN and Jeremy James STONE, sell, assign and transfer to Ahlstrom Dexter LLC., its successors and assigns (hereinafter called "Assignee"), the entire right, title and interest in and to said improvements within the United States and in and to any Letters Patent of the United States which may be obtained thereon, together with said application and all divisional, continuing, substitute, renewal, reissue, and other applications for Letters Patent which have been or may be filed on said improvements in the United States; the same to be held and enjoyed by the Assignee for its and their sole use and behoof.

We hereby authorize and request the Commissioner of Patents and Trademarks to issue all Letters Patent of the United States on said improvements to the Assignee.

We further covenant and agree that when requested by the Assignee, and without further consideration, but at the cost and expense of the Assignee, we will, execute and deliver all applications for patent on said improvements, execute all lawful oaths and other papers, supply to the Assignee all facts and evidence known to us relating to said improvements and the history and development thereof, testify in all interferences, suits, and other legal proceedings, and generally do

everything rightful which the Assignee shall consider desirable for aiding in securing, maintaining, and enforcing proper patent protection for said improvements and for vesting the title to said improvements in the Assignee.

We further covenant that we have the lawful right to assign the interest in said improvements in the manner and form as herein expressed and that the interests herein conveyed are free from prior assignment, grant, mortgage, license, or other encumbrance whatsoever.

Date 11th July 2001

Alan Wightman

J. J. Stone  
Witness

A. Deane  
Witness

Date 11th July 01.

J. J. Stone

J. J. Stone  
Witness

A. Deane  
Witness

*State of Delaware*  
**Office of the Secretary of State**

PAGE 1

FILING #0002345461 PG 02 OF 02 VOL B-00455  
FILED 11/20/2001 05:25 PM PAGE 03264  
SECRETARY OF THE STATE  
CONNECTICUT SECRETARY OF THE STATE

I, HARRIET SMITH WINDSOR, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THAT THE SAID "AHLSTROM DEXTER LLC", FILED A CERTIFICATE OF AMENDMENT, CHANGING ITS NAME TO "AHLSTROM WINDSOR LOCKS LLC", THE SIXTEENTH DAY OF NOVEMBER, A.D. 2001, AT 9 O'CLOCK A.M.

AND I DO HEREBY FURTHER CERTIFY THAT THE AFORESAID LIMITED LIABILITY COMPANY IS DULY FORMED UNDER THE LAWS OF THE STATE OF DELAWARE AND IS IN GOOD STANDING AND HAS A LEGAL EXISTENCE NOT HAVING BEEN CANCELLED OR DISSOLVED SO FAR AS THE RECORDS OF THIS OFFICE SHOW AND IS DULY AUTHORIZED TO TRANSACT BUSINESS.

AND I DO HEREBY FURTHER CERTIFY THAT THE ANNUAL TAXES HAVE BEEN PAID TO DATE.



*Harriet Smith Windsor*  
Harriet Smith Windsor, Secretary of State

3252267 8320

AUTHENTICATION: 1454477

010585967

DATE: 11-19-01

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**APPLICATION FOR AMENDED CERTIFICATE OF REGISTRATION  
FOREIGN LIMITED LIABILITY COMPANY**

Office of the Secretary of the State  
30 Trinity Street / P.O. Box 150470 / Hartford, CT 06115-0470 / Rev.12/1999

*See reverse for instructions*

Spa FILING #0002345461 PG 01 OF 02 VOL B-00455  
FILED 11/20/2001 05:25 PM PAGE 03263  
SECRETARY OF THE STATE  
CONNECTICUT SECRETARY OF THE STATE

**1. NAME OF THE LIMITED LIABILITY COMPANY IN ITS STATE/COUNTRY OF FORMATION:**

Ahlstrom Dexter LLC

**2. NAME UNDER WHICH THE LIMITED LIABILITY COMPANY TRANSACTS BUSINESS IN  
CONNECTICUT (if different than name stated in 1 above):**

**3. STATE/COUNTRY OF FORMATION:**

Delaware

**4. AMENDMENT(S) TO THE CERTIFICATE OF REGISTRATION:**

Change of name to Ahlstrom Windsor Locks LLC

(Reference an 8 1/2 X 11 attachment if additional space is needed)

**5. EXECUTION:**

Dated this 16 day of November, 2001

Dean Holbrook

Secretary

*Dean Holbrook*

Print or type name of signatory

Capacity of signatory

Signature

DATA REPORTING CORP.  
330 Roberts Street, Suite 203  
East Hartford, CT 06108-3654

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